Department of Energy
Oak Ridge Operations
P. O. Box E
Oak Ridge, Tennessee 37831

#1014

December 9, 1983

#18

Mr. Terry Cothron
Environmental Engineer
Bureau of Environment
Tennessee Department of Health & Environment
150 Ninth Avenue, North
Nashville, Tennessee 37203

Dear Terry:

Enclosed are three copies of the only version of the Lloyd/Gore report we have received at ORO. I just spoke with Mrs. Lloyd's staff in Washington and they promised to send me the final version. When I receive it, I'll send you a copy.

I placed the printing date on the front sheet of this version, based on information furnished by Mrs. Lloyd's staff. Because of our not knowing that the "clock was running" on the actions called for in the report, staffers have told us that, while January 17 and February 17 would appear to be the due dates for 60- and 90-day activities, the subcommittees will consider the dates to be January 24 and February 24. That, of course, does not leave a lot of time, considering the intervening holidays.

I appreciate your expression of willingness to try to get the report on unresolved jurisdictional questions moving before Christmas by agreeing that TDHE (and perhaps Tennessee Attorney General) staff will meet with DOE and EPA, hopefully on December 19. It is hoped that, with prior thought on the matter by each attendee, the meeting can accomplish a great deal within a couple of hours.

TDHE will as a head 12-14-83 TLC

I look forward to hearing from you soon.

Sincerely,

James L. Foutch
Deputy Chief Counsel
for Legal Services

CC-10:JLF

Enclosure:
As stated

WEC/MTB/P.Torri/SMApp

cc w/o enc: Howard D. Zeller
Asst. Regional Administrator
for Policy & Management
EPA - Region IV
345 Courtland St.
Atlanta, GA 30365

#1014

The Subcommittees conclude with the observation that DOE now appears to be on the right course in Oak Ridge and that it is far more constructive to look to the future, albeit with a critical eye, than to dwell on the past.

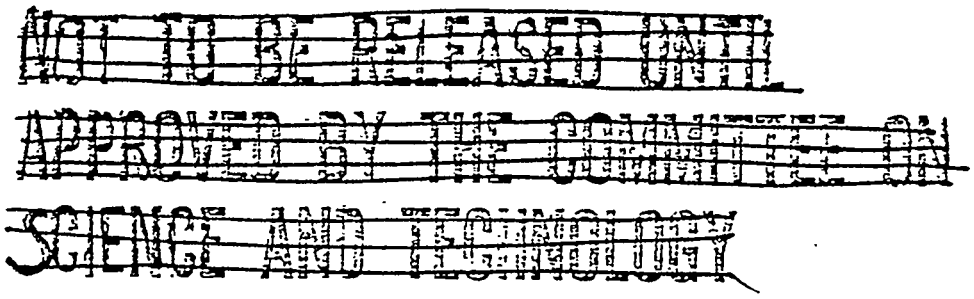
SUBCOMMITTEE ON ENERGY RESEARCH AND PRODUCTION

AND

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

REPORT

"THE EXTENT AND IMPACT OF MERCURY RELEASES AND OTHER POLUTANTS AT THE DEPARTMENT OF ENERGY'S OAK RIDGE COMPLEX AT OAK RIDGE, TENNESSEE"



PRINTING DATE:
November 17, 1983

Letter of Transmittal

Honorable Don Fuqua, Chairman
Committee on Science and Technology
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

We are pleased to transmit the joint report of the Subcommittee on Energy Research and Production and the Subcommittee on Investigations and Oversight entitled, "The Extent and Impact of Mercury Releases and Other Pollutants at the Department of Energy's Oak Ridge Complex at Oak Ridge, Tennessee."

The report sets forth the findings and recommendations from our Subcommittees' extensive investigation into the mercury and other environmental problems at the Department of Energy's Complex (including the Y-12 Plant, Oak Ridge National Laboratory, and the Oak Ridge Gaseous Diffusion Plant) in Oak Ridge, Tennessee, and from our joint hearing on these problems held in Oak Ridge on July 11, 1983.

Our review leads us to several conclusions:

(1) The residents of Oak Ridge do not appear to be in any immediate danger either from the mercury discharged during the 1950s and 1960s from the Y-12 Plant, or from any other source of contamination of which we are aware;

(2) Because of a sense of mission about national defense developed during the 1950s, a concern for secrecy, and use of facilities built during the 1940s and 1950s, DOE has been slow to change its attitude toward its pollution control practices and to adapt its practices, even at its non-defense related facilities, to modern waste disposal techniques. As a result, DOE has generally failed to fulfill its environmental responsibilities to the Oak Ridge community.

(3) DOE has recently acknowledged its shortcomings and has made increased effort to become a good environmental neighbor. However, substantial environmental problems continue to exist at DOE's Oak Ridge complex and their resolution will require both a sustained commitment of will, time, and funds from DOE and support from Congress.

We appreciate the cooperation of the citizens of Oak Ridge, the environmental community, the U.S. Environmental Protection Agency, the Tennessee Department of Health and Environment, and DOE in our investigation and hearing on complex and difficult issues. We would also like to thank Adam Finkel of the Kennedy School of Government, Harvard University, for his assistance in the investigation and the report preparation.

Sincerely,

MARILYN LLOYD
Chairman, Subcommittee on
Energy, Research and Production

ALBERT GORE, JR.
Chairman, Subcommittee on
Investigations and Oversight

TABLE OF CONTENTS

THE EXTENT AND IMPACT OF MERCURY RELEASES AND OTHER POLLUTANTS AT THE DEPARTMENT OF ENERGY'S OAK RIDGE COMPLEX AT OAK RIDGE, TENNESSEE

RECOMMENDATIONS

To help ensure that environmental concerns become more thoroughly integrated into DOE' sense of mission at Oak Ridge and to enhance DOE's ability to develop a comprehensive and sound environmental program at Oak Ridge, our Subcommittee's primary recommendation is that DOE establish a board of experts, from outside DOE and its operating contractor, to assist in development and review of DOE's environmental efforts.

The Subcommittees also recommend that DOE/ORO submit a comprehensive program management plan delineating funding requirements and scheduled milestones for facility design, construction and initiation of modern waste management practices, including supporting R&D activities and demonstration of such techniques. The DOE should submit this plan to the Subcommittees together with a plan for resolution of jurisdictional disputes between EPA and DOE within 60 days of printing of this report. The DOE should also continue frank and open discussions with EPA and TDHE such that substantive agreement on compliance with environmental laws can be achieved in a timely fashion.

INTRODUCTION

On July 11, 1983, the Subcommittee on Energy, Research and Production and the Subcommittee on Investigations and Oversight convened in Oak Ridge, Tennessee, for a hearing on the loss to the environment of 2.4 million pounds of mercury at the Department of Energy's (DOE) Y-12 Plant in Oak Ridge and to examine the state of the environment at DOE's Oak Ridge Complex generally.[1] The impetus for the hearing came from a series of news reports which appeared in the Tennessee press in early 1983 which revealed unusually high ambient levels of mercury in the waters of the East Fork Poplar Creek (EFPC) and on the grounds surrounding the Y-12 nuclear weapons plant. The reports were based on Department of Energy (DOE) documents obtained under the Freedom of Information Act (FOIA). At about the same time as the news stories began, the Tennessee Department of Health and Environment (TDHE) was conducting inspections of the Y-12 area. TDHE reports of the inspections suggested that pollution problems stemming from the waste management practices at Y-12 perhaps posed even more significant hazards than did the mercury levels.

In response to a FOIA request, DOE, on May 17, 1983, released a recently declassified 1977 report which showed that the ambient mercury levels found in the EFPC were probably associated with approximately 2.4 million pounds of mercury discharged from the Y-12 plant, primarily during the 1950s and 1960s.[2]

Although the Oak Ridge community had been generally aware of some large mercury spills at the plant, and environmental reports issued by the Oak Ridge National Laboratory (ORNL) during the 1970s contained some data on mercury, the 1977 report and the media accounts were the first indication of the quantity of mercury loss to the environment and the potential extent of mercury pollution in Oak Ridge. The release of this six-year-old report, and the other stories in the press, suggested that DOE officials withheld information on the magnitude of the mercury problem from state and local regulatory agencies and from the

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[1] DOE's Oak Ridge reservation contains three major facilities: Y-12, the Oak Ridge National Laboratory, and the Oak Ridge Gaseous Diffusion Plant.

[2] The 2.4 million pound estimate was developed by DOE through employee interviews and reconstruction from historical records. Because of absence of adequate records, the figures are best estimates. After substantial efforts to refine the estimates presented in the 1977 inventory report, DOE now believes that a range of 2 to 2.6 million pounds of mercury was lost or unaccounted for. Of the total amount, DOE estimated that 715,000 to 965,000 pounds was loss to the environment and 1.1 to 1.9 million pounds is unaccounted for. See hearing transcript at 17 (LaGrone).

public.

The reported presence of methyl mercury in local fish, combined with the many unknowns about the fate of the large quantity of metallic mercury present underneath the Y-12 facility, caused concern in the Oak Ridge community. These factors also caused state and federal regulatory agencies to question whether DOE's environmental program, which was supposed to provide a level of protection "substantively equivalent" to formal EPA and state oversight, did in fact provide adequate protection for health and the environment in Oak Ridge.

Equally significant, the events, as they unfolded, damaged the credibility of DOE, whom the community had generally regarded as a "good neighbor." The implications that the Department had employed substandard pollution control measures, had failed to apprise the community of potential environmental problems until pressed into response by media accounts, and had not expended full effort to study or respond to the pollution problems during the past years, all combined to cast doubt on the environmental responsiveness of DOE and its prime operating contractor, Union Carbide Corp. Nuclear Division (UCND).

The Chairman of the Subcommittee on Energy Research and Production requested the Chairman of the Subcommittee on Investigations and Oversight to join in investigation of these issues, and the Subcommittees held a joint hearing on July 11 which resulted from this investigation. The investigation and hearing focused on DOE's past conduct and prospects for future improvement, and on the mercury contamination and the environmental problems at DOE's Oak Ridge complex. Although the investigation of the non-mercury related pollution problem was less complete than the investigation of the mercury situation, a number of witnesses at the hearing provided important additional information on the scientific and other aspects of these problems.

This report sets out and discusses the Subcommittee's findings and recommendations. A list of the witnesses appearing at the hearing appears in Appendix.

STATEMENT OF ISSUES

The Subcommittees determined that four broad issues formed the basis for the investigation and hearing:

I. Hazards Posed by the Pollution

(A) Mercury -- Are the residents of Oak Ridge exposed to an immediate health hazard from the mercury discharged at the Oak Ridge Reservation during the 1950s and 1960s? Is there reason to believe that any long-term health hazards are associated with the mercury releases? What

monitoring and data collection activities are required to reduce any remaining uncertainties about the fate of discharged mercury, to continue to protect the public health, safety, and environment and to provide a sound basis for whatever remedial actions become necessary?

(B) Other Pollutants -- Are the Oak Ridge residents exposed to an immediate health hazard from pollutant releases other than mercury, both historical and ongoing? Is there reason to believe that any long-term health hazards are associated with past or current pollutant levels? If there is no cause for immediate concern, what monitoring and data collection activities are required to reduce any remaining uncertainties about the fate of discharged material, to continue to protect the public health, safety, and environment and to provide a sound basis for whatever remedial actions become necessary?

II. DOE & UCND Conduct

Did DOE and their contractor, Union Carbide, act responsibly in identifying the problems associated with the mercury, in carrying out requisite monitoring, and in taking appropriate remedial and other actions? Are DOE and Union Carbide now cooperating with state and federal officials and informing the local citizenry regarding the mercury releases?

III. Data Collection and Remedial Actions

(A) Mercury -- What steps should be taken to ensure that: (1) the collection of additional data on mercury contamination; (2) the assessment of the mercury problem at the Oak Ridge Reservation; and (3) the development and implementation of any necessary remedial actions, proceed expeditiously and in a manner that enhances the credibility and scientific integrity of these efforts?

(B) Other Pollutants -- What steps should be taken to ensure that (1) the collection of additional data on environmental pollutants; (2) the assessment of the chemical pollution problem at the Oak Ridge Reservation; and (3) the development and implementation of any necessary remedial actions, proceed expeditiously and in a manner that enhances the credibility and scientific integrity of these efforts?

IV. Obstacles to Pollution Control

Are there historical, statutory, institutional, management, personnel problems which have formed barriers or removed incentives for the implementation of modern pollution control and waste management techniques at the Oak Ridge

Reservation?

SUMMARY OF FINDINGS

I. Hazards Posed by the Pollution

(A) Mercury

Issue: Are the residents of Oak Ridge exposed to an immediate health hazard from the mercury discharged at the Oak Ridge Reservation during the 1950s and 1960s? Is there reason to believe that any long-term health hazards are associated with the mercury releases? What monitoring and data collection activities are required to reduce any remaining uncertainties about the fate of discharged mercury, to continue to protect the public health, safety, and environment and to provide a sound basis for whatever remedial actions become necessary?

Findings:

1. Although the discharged and spilled mercury is present in significant concentrations in several environmental media in the Oak Ridge area, mercury contamination does not present an immediate danger to the public health. The scientific experts who testified at the hearing, including those not associated with DOE or UCND, were unanimous in corroborating this finding. The dispersal of the mercury and mercury compounds throughout the Clinch River system, the probable fate of the spilled elemental mercury in the bedrock under the Y-12 facility, and the large buffer zone between Y-12 and the nearest population centers outside the Oak Ridge Reservation all combine to minimize the public health impact of the mercury releases.

2. The potential for long-term harm from mercury is harder to resolve. Although it is impossible, without a more specific understanding of biomethylation parameters and the transport of mercury in groundwater, to provide complete assurances to the Oak Ridge residents that potential problems will not arise sometime in the future, it is unlikely that harm will occur if appropriate data is gathered in a timely fashion and if a monitoring plan and, if necessary, a remedial plan are implemented.

3. There are a number of crucial deficiencies in both the scope and quality of the current data on mercury. In order to correct these deficiencies, DOE will need to develop and implement a comprehensive plan to gather additional data. In particular DOE will need to: (1) improve and expand its monitoring of groundwater; (2) conduct a broader overall assessment of the environmental fate of the mercury discharge, both over time and across geographic locations;

and (3) establish new sampling points so that the potential entry of mercury into potable groundwater or the human food chain can be quickly pinpointed.

B. Other Pollutants

Issue: Are Oak Ridge residents exposed to an immediate health hazard from pollutant releases other than mercury, both historical and ongoing? Is there reason to believe that any long-term health hazards are associated with past or current chemical pollutant levels? If there is no cause for immediate concern, what monitoring and data collection activities are required to reduce any remaining uncertainties about the fate of the discharged material to protect the public health, safety, and environment and to provide a sound basis for whatever actions become necessary?

Findings:

4. If the ongoing sources of chemical pollution of groundwater, such as the S-3 Ponds, New Hope Pond, and the various land burial sites, are cleaned up in a thorough and timely manner, there should be no imminent public health and safety hazard from chemical releases at Y-12, due to some of the same factors that mitigate the threats from mercury.

5. The potential for long-term harm to health from the other pollutants at Oak Ridge is much harder to resolve. Although it is impossible, without a more specific understanding of the fate and transport of chemical contaminants in groundwater, and a more extensive analysis of the problem, to provide complete assurances to the Oak Ridge residents that problems will not arise sometime in the future, timely and comprehensive data gathering and monitoring and the development and implementation of any necessary remedial plans should minimize the potential impact of such pollution.

6. There are a number of crucial deficiencies in both the scope and quality of the current data on chemical pollution at Oak Ridge. In order to correct these deficiencies, DOE will need to develop much additional data in order to comprehensively assess the problem and to develop and implement a plan for any necessary remedial action. In particular DOE will need to: (1) improve and expand its monitoring of groundwater; (2) conduct a broader overall assessment of the environmental fate of discharged material, both over time and across geographic locations; and (3) establish new sampling points so that the potential entry of contaminants into potable groundwater or the human food chain can be quickly pinpointed.

II. DOE and UNCD Conduct

Issue: Did DOE and their contractor, Union Carbide, act responsibly in identifying the problems associated with mercury, in carrying out requisite monitoring, and in taking appropriate remedial and other actions? Are DOE and Union Carbide now cooperating with state and federal officials and informing the local citizenry regarding the mercury releases?

Findings

7. DOE exercised poor judgment and did not act responsibly during the period 1977 through 1982 by failing to fully identify the problems associated with the mercury releases, and by failing to develop and implement any necessary monitoring and remedial action. UCND was guided by the DOE in its actions, or lack of actions, on the mercury contamination problem. Although not without blame for failure to aggressively pursue its recommendations, UCND did make appropriate recommendations for follow-up which were not acted upon by the DOE.

8. From at least 1977 and through at least 1982, DOE released incomplete and misleading information about mercury to the public and to other governmental agencies and failed to cooperate with the public and other agencies in developing a thorough assessment of and plan to address the mercury problem.

9. Early in 1983, DOE instituted new practices and policies which are intended to cooperatively gather data on mercury, to develop any necessary remedial plan, and to provide timely information to interested parties. These measures constitute a reasonable first step toward fulfilling DOE's responsibilities for the mercury problem.

III. Data Collection and Remedial Actions:

(A) Mercury

Issue: What steps should be taken to ensure that: (1) the collection of additional data on mercury; (2) the assessment of the mercury pollution problems at the Reservation; and (3) the development and implementation of any necessary remedial actions, proceed expeditiously and in a manner that enhances the credibility and scientific integrity of these efforts?

Findings:

10. The current framework of agreements and commitments by the Director of the Oak Ridge Operations Office, the EPA, and the State of Tennessee are a good first step toward ensuring the collection of necessary data on the mercury

contamination problem. Assuming the current atmosphere of cooperation continues, it is likely that a full assessment and resolution of the mercury problem will be achieved.

11. The establishment of an independent peer review panel to oversee data collection, analysis, and remediation will help restore the scientific credibility of the Department of Energy with the local community, public, and with other agencies generally.

(B) Other Pollutants

Issue: What steps should be taken to ensure that: (1) collection of additional data on chemical contamination at Oak Ridge; (2) the assessment of the pollution problems at the Reservation; and (3) the development and implementation of any necessary remedial actions, proceed expeditiously and in a manner that enhances the credibility and scientific integrity of these efforts?

12. Enhancing DOE's waste management and pollution control practices and restoring DOE's credibility will require implementing significant institutional and operational changes in the way in which the Oak Ridge Operations Office manages its waste disposal and environmental control activities. DOE has begun to implement changes that will help to remedy some existing environmental concerns. However, a sustained committment and substantial additional efforts, including the broadening of the memorandum of understanding with EPA and TDHE to include pollution control and waste management problems, will be necessary. Doubts about DOE's commitment to change will continue to exist until outside review of DOE's efforts are provided. A scientific peer review mechanism will be helpful to enhance DOE's abilities and its credibility.

IV. Obstacles to Pollution Control

Issue: Are there historical, statutory, institutional, management, and/or personnel problems which have formed barriers or removed incentives for the implementation of modern pollution control and waste management techniques at the Oak Ridge Reservation?

Findings:

13. Although the Y-12 facility itself was built in the 1950s and thus imposes some technological limiatations on DOE, DOE has not until now made a concerted effort to upgrade its waste management practices, some of which are outdated. ORO's record is particularly disappointing because of the substantial progress many private-sector generators have made during recent years and because ORO has qualified personnel at ORNL available to design and maintain improved

state-of-the-art waste management techniques.

14. There does not appear to be any legal or structural barriers to DOE assuming appropriate environmental responsibilities in the future. Barriers and reduced incentives for implementation of modern pollution control and waste management techniques at the Oak Ridge Reservation have contributed in the past to an unwillingness or a slowness in DOE assuming appropriate environmental responsibilities. Barriers and reduced incentives include or stem from:

- o A mission orientation rooted in the national defense concerns of the 1950s and 1960s which resulted in a strong protectionist attitude at ORO and a failure to adequately incorporate environmental concerns within its mission.
- o A DOE organizational structure that does not provide for alternative policy avenues if the ORO manager is not strongly supportive of environmental concerns.
- o The use of a facility built largely in the 1950s, and the continued use of outdated and environmentally unsound disposal practices will now require major additional funds to clean up and bring into compliance with modern pollution control and waste management practices.
- o An absence until recently of a stringent EPA and TDHE permitting and enforcement effort directed at Oak Ridge.

15. Sustained DOE commitment and Congressional support will be necessary to ensure that Oak Ridge brings its waste disposal and pollution control practices up to the state-of-the-art.

RECOMMENDATIONS

Based on the findings of the investigation and hearing, the Subcommittees make the following recommendations:

1. That an independent scientific peer review group, with participation from community residents, be established by DOE in consultation with the EPA, the TDHE and other agencies to provide advice to and assist DOE on the development of key criteria for environmental data collection and the upgrading of waste management practices at the Oak Ridge Reservation. Such a group would be composed of scientists and community residents unaffiliated with DOE or UCND (or any successor contractor) and would include selected experts. The National Academy of Sciences or a similarly prestigious organization of scientists, should have responsibility for selecting or reviewing selection of participants.

The review group would serve the following crucial functions in assessing and monitoring both the mercury pollution problems and the potential impact of other pollutants:

a) Assist in the development of and review plans for assessment of environmental pollution problems, including problem definition, data collection, sampling, and analysis of data.

b) Assist in the development of and review proposals for (1) evaluating the environmental fate and transport of mercury and other pollutants, and (2) evaluating cleanup proposals and contaminant discharge mitigation plans;

c) Assist in the development of and provide recommendations on the upgrading of waste management techniques and construction of needed facilities at Oak Ridge, particularly as regards the completion of a central pollution control facility, and make recommendations regarding innovative waste management and pollution mitigation techniques.

d) Assist in the development of and review plans to ensure that timely and accurate data are made available to the public.

Without such an advisory panel in place, challenges would undoubtedly arise to the cleanup plan DOE presents to the EPA under its interagency agreement. An independent review group would alleviate the perceived conflict of interest that exists when the same entity is charged with assessing and resolving its own pollution problems. — FEDERAL GOVT.?

2. That the DOE/ORO submit a comprehensive program management plan delineating funding requirements and scheduled

[3]Hearing transcript at 5 (Lloyd).
[4]Ibid., at 81 (Gore).
[5]Ibid., at 192 (D'Itri).

milestones for facility design, construction and initiation of modern waste management practices, including supporting R&D activities and demonstration of such techniques. The plan must address how DOE will expeditiously close the S-3 ponds. The DOE should submit this plan to the Subcommittees within 90 days of printing of this report, so that the Congress can utilize the plan in acting on the FY '85 budget.

The S-3 waste disposal ponds were mentioned by several witnesses as presenting a serious environmental concern, that needs immediate attention. The ponds must be closed. The DOE plan must address closure of the ponds and alternatives and serve to focus DOE resources toward resolving all environmental problems at Oak Ridge in a timely manner.

3. That DOE and EPA continue their discussions and efforts to resolve any outstanding disputes regarding the scope of applicability of federal environmental laws at Oak Ridge, and EPA enforcement at Oak Ridge, and that DOE and EPA submit a report to the Subcommittees within 60 days of the date of this report on progress made, conflicts unresolved and recommendations for legislative or other action to resolve the remaining differences. Similar effort must be made by DOE with the TDHE.

Jurisdictional conflicts have impeded environmental progress at Oak Ridge and contributed to conflicts between DOE, on the one hand, and EPA and the TDHE on the other. Jurisdictional conflicts should not be permitted to interfere with much needed environmental improvements at Oak Ridge.

EXPLANATION OF FINDINGS

I. Health Hazard

(A) Mercury

Issue: Are the residents of Oak Ridge exposed to an immediate health hazard from the mercury discharged at the Oak Ridge Reservation during the 1950s and 1960s? Are drinking water supplies, human food sources, or groundwater resources contaminated as a result of the releases? Is there reason to believe that any long-term health hazards are associated with the mercury releases? What monitoring and data collection activities are required to reduce any remaining uncertainties about the fate of discharged mercury, to continue to protect the public health, safety, and environment and to provide a sound basis for whatever remedial actions become necessary?

Finding:

1. Although the discharged and spilled mercury is present in significant concentrations in several environmental media in the Oak Ridge area, mercury contamination does not present an immediate danger to the public health. The scientific experts who testified at the hearing, including those not associated with DOE or UCND, were unanimous in corroborating this finding. The dispersal of the mercury and mercury compounds throughout the Clinch River System, the probable fate of the spilled elemental mercury in the bedrock under the Y-12 facility, and the large buffer zone between Y-12 and the nearest population centers outside the Oak Ridge Reservation all combine to minimize the public health impact of the mercury releases.

2) The potential for long-term harm from mercury is harder to resolve. Although it is impossible, without a more specific understanding of biomethylation parameters and the transport of mercury in groundwater, to provide complete assurances to Oak Ridge residents that potential problems will not arise in the future, it is unlikely that harm will occur if appropriate data is gathered in a timely fashion and if a monitoring plan and, if necessary, a remedial plan are implemented.

3. There are a number of crucial deficiencies in both the scope and quality of the current data on mercury. In order to correct these deficiencies, DOE will need to develop and implement a comprehensive plan to gather additional data. In particular, DOE will need to: (1) improve and expand its monitoring of groundwater; (2) establish a broader overall assessment of the environmental fate of the mercury

discharge, both over time and across geographic location; and (3) construct new sampling points so that the potential entry of mercury into potable groundwater, or the human food chain can be quickly pinpointed.

Discussion

Short-term Health Concerns

The question of whether the mercury releases have caused an imminent health hazard proved to be the most easily resolved issue at the hearing. All of the witnesses agreed on the central dichotomy of the Oak Ridge situation: although prudent action demands a quick and thorough response to several existing environmental problems, the watchword of this effort will be, as Chairman Lloyd characterized the attitude of the Oak Ridge citizens, "generally concerned, but not alarmed."[3] As Congressman Gore stated at the hearing, although the Subcommittees intend to "make certain that [these serious problems] do not recur, ... [and] to fix the institutional arrangements that led to a failure to deal with it properly the first time... there is no present threat to human health as far as the citizens of Oak Ridge are concerned."[4]

There are basically three parameters which determine the degree of risk to human health presented by mercury and the other spilled hazardous materials: (1) the toxicity of the discharged material; (2) the physical transport and cycling of this material in and among the various air, land, and water media; and (3) the entry and uptake of the dispersed material or its byproducts into humans. Witnesses at the hearing provided testimony supporting the conclusion that none of these three parameters is sufficiently adverse in the Oak Ridge case to cause an imminent risk to humans from the mercury pollution:

- o Toxicity -- Dr. D'Itri, the Subcommittees' expert consultant on mercury, drew a sharp distinction between the absence of immediate health effects from the mercury releases from Y-12 with the mercury releases into Japan's Minamata Bay in the 1950s and the mercury poisonings in Iraq in 1971-1972. According to Dr. D'Itri, "there is no comparison at all"[5] between the Oak Ridge incident and these two well-known problems, because the mercury released from Y-12 was either in its elemental form or within insoluble inorganic compounds. At Minamata and Iraq, highly toxic methylmercury was released directly into the environment. Although bacteria can slowly convert inorganic mercury compounds into methylmercury, there is no evidence that appreciable

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[3] Hearing transcript at 5 (Lloyd).
[4] Ibid., at 81 (Gore).
[5] Ibid., at 192 (D'Itri).

biomethylation has occurred in the Oak Ridge system.

- Fate and Transport -- Although no comprehensive "mass balance" study has been attempted to determine the distribution of the spilled and discharged mercury in the local environment, the scientific witnesses at the hearing generally agreed that both the discharged mercury in process wastes and the spilled metallic mercury have undergone environmental transport that has diminished their risks to humans. Dr. D'Itri concluded that the mercury in the process wastes "now resides buried deep in the sediments of the Clinch River"[6] after 10 or more years of gradual dispersal in the river system and burial under new bottom sediments. Others noted that some of this material had been deposited in the floodplain soils of the East Fork of Poplar Creek.[7] In addition, none of the witnesses challenged DOE's claim that most of the spilled metallic mercury currently resides in underground solution cavities and fracture zones in or near the bedrock layer, although DOE has not yet undertaken studies to determine what portion of the mercury remains in the saturated zone, where it could be subject to long-term transport by flowing groundwater.

- Uptake by humans -- The four most important routes of human toxicity from mercury in the environment are drinking of contaminated water, breathing of contaminated air, ingestion of contaminated species from the terrestrial food chain, and ingestion of contaminated species from the aquatic food chain. In the Oak Ridge case, only the fourth route poses any cause for short-term concern. The first three routes present no problems for the following reasons: (1) the residents of the area get their drinking water from intakes on the Clinch and Tennessee Rivers above the points of entry of any contaminants from Oak Ridge. Moreover, the 93-square-mile Oak Ridge Reservation is sufficiently large that any mercury contamination of groundwater has probably not reached off-site wells or has reached them in significantly diluted form; (2) since mercury has not been used in large quantities at Y-12 since the mid-1960s, air concentrations have long since returned to background levels, although there is some slight concern about residents breathing contaminated dust on roads or playgrounds;[8] and (3) the uptake of mercury by terrestrial plants (and thus available to cows and other land animals) is generally very low. The recent hypothetical uptake study by Battelle Columbus Laboratories concluded that even if an

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[6] Ibid., at 161, 175 (D'Itri). See also, Ibid., at 142 (Richmond).

[7] Ibid., at 14 (LaGrone), and at 158 (Coutant).

[8] As a temporary measure, DOE has agreed to palce six inches of topsoil over the contaminated areas. LaGrone, supplemental answer to questions #___.

Oak Ridge resident had spread over 300 tons of contaminated soil on a large garden, the vegetation grown there would not contain dangerous amounts of mercury.[9]

For a number of reasons, the threat posed by mercury-contaminated fish is also not serious, although it does represent a situation demanding additional surveillance. First, the fish nearest the mercury sources (New Hope Pond and the upper EFPC) are very small, "if you can find them"[10] at all, and do not accumulate much methylmercury due to their immaturity and low weight. EFPC is no longer "an aquatic desert, devoid of all life," but it is not an ideal environment for fish. In the reaches of the river system where larger fish find a hospitable environment, the mercury concentrations in sediment are lower than they are in EFPC. According to Mr. Zeller (EPA), the Tennessee Valley Authority (TVA) sampling of the fish in the nearby Watts Bar sport fishery revealed mercury levels "well below the FDA limit."[11] Second, even the most highly contaminated fish in EFPC contain 2 ppm mercury or less. It is reasonably well-established that intake of up to 30 micrograms of organic mercury per day is a safe dosage for healthy adults. Therefore, an Oak Ridge resident would have to eat more than one-half ounce of the most contaminated fish every day (15 grams X 2 micrograms/gram) in order to ingest this quantity of mercury, which itself has a built-in safety factor of ten.[12] Finally, since EFPC is now posted with warnings to residents not to swim or fish there, and since extensive publicity has highlighted the potential problem with mercury-contaminated fish in the EFPC, it is even more unlikely that residents would ingest harmful quantities of mercury in fish.

Long-term Concerns

Some uncertainty exists about the long-term health effects at Oak Ridge of the mercury releases. Dr. Richmond of ORNL testified that "in all probability there is not a long term threat as well" from the mercury releases. Both Drs. Richmond and Auerbach (ORNL) emphasized, however, the need to collect much more information to support the ultimate assessment of the long-term risks.

Clearly, additional data gathering and monitoring and cleanup, (if deemed necessary) of the mercury problem will determine how probable and severe any long-term risks might be. Even if, however, all ongoing inputs of mercury[13] into the Oak

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[9] Prepared statement of LaGrone, at 28.
[10] Hearing record at 164 (D'Itri).
[11] Ibid., at 69 (Zeller).
[12] Ibid., at 141-142 (Richmond).

Ridge environment were to cease immediately, there are still several mechanisms by which the existing contaminant levels could become health concerns in the future.[14] Dr. D'Itri expressed his belief that "we are on the tail end" of a long cycle with regard to mercury. The absence of visible adverse effects from either today's "low" levels of mercury or yesterday's "high" levels does not rule out the possibility however that the mercury situation could worsen in the future. Although the Subcommittees are not in a position to estimate the probability that any of the mechanisms that could transform the current situation into a serious problem would actually occur, they are discussed in some detail in the section of this report on data gaps.[15] Stated simply, however, even though the mercury has already been present in the local environment for years or decades, there is no guarantee that present patterns of transport through the ecosytem and uptake by humans will continue unchanged in future years. Vigilence in the future is clearly required.

According to many of the participants in the hearing, there is now an important new variable in predicting future effects of mercury at Oak Ridge -- awareness. It reasonable to conclude that the chances for serious problems in the future are reduced now that all parties have either acknowledged or been informed of the probable extent of the problem and the need to maintain a close watch on future developments.

Data Deficiencies

Although DOE and UCND have gathered a sizable quantity of environmental monitoring data on the mercury problem since the early 1970s, there exist significant gaps in both of the key areas that motivate data collection in the first place: (1) the need to make an accurate assessment of existing problems; and (2) the need to accurately predict the future course of environmental concerns and plan remedial actions accordingly.

Some of the data DOE has agreed to collect under the May 26, 1983 Memorandum of Understanding[16] with EPA and the TDHE may fill

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[13]Currently 50 pounds of mercury per year is discharged into EFPC from the mercury traped at Y-12. Y-12 is not using mercury in any process at present. See hearing transcript at 139 (Richmond), and at 162 (D'Itri).

[14]Ibid., at 176 (D'Itri).

[15]See discussion on p. 35-43.

[16]As a result of disclosure of the mercury situation, and of the TDHE compliance inspection of Y-12 made under the authority of the Clean Water Act in February 1983, DOE, EPA, and TDHE signed a MOU 1983 to cooperatively gather data on mercury and to begin to resolve some of the environmental problems at Y-12. The MOU is contained in the Appendix.

some of these gaps, particularly the plans to conduct subsurface searches for spilled mercury and to collect data on chemical contamination of groundwater. As was pointed out at the hearing, however, even this needed information will be of limited use without a comprehensive and methodical approach to all data collection, rather than the piecemeal approach DOE has used in the past. Significant data efforts need to be undertaken in five catagories: short-term assessment, long-term assessment, temporal trends analysis, the big picture, and interactive data needs.[17]

o Data needed for short-term assessments. Basically, DOE's past efforts at sampling for mercury in the Oak Ridge area, when supplemented the data obtained from other sources, have generated a reasonably complete picture of the immediate health risks posed by mercury in the environment and the human food chain.

First, DOE needs to supplement its groundwater data on mercury contamination with an investigation of groundwater acidity in the area. Elemental mercury is expected to adsorb to soil constituents and show limited solubility in groundwater, unless the mercury encounters acidic groundwater (either due to natural acidity or acidic wastes allowed to enter the aquifer) and thereby becomes soluble.

Others have noted the need for DOE to investigate possible off-site movement of pollutants in groundwater, an issue not addressed in DOE's current groundwater study with Law Engineering.[18]

Second, DOE needs to investigate the possibility of human toxicity due to inhalation or ingestion of soil and dust contaminated with mercury. The study conducted by Dr. Revis did not address the issue of chronic toxicity, nor did it involve testing the most heavily contaminated soils.[19] According to Mr. Zeller, Centers for Disease Control specialists should also be brought in to assess the health threat, if any, posed by the highly contaminated (300 ppm Hg and above) soil used as fill at Jefferson Junior High School.[20]

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[17]Written testimony of Richmond and Auerbach at ___, see also hearing transcript at 33 (LaGrone); written testimony of Countant at 3-4; hearing transcript at 167 (D'Itri); written testimony of Zeller at 18; writtent testimony of Revis at 6.

[18]Hearing transcript at 17, 24 (LaGrone).

[19]Ibid. at 153, 190 (Revis).

[20]LaGrone has requested CDC assistance for this purpose. Ibid., at 14. The TDHE has also set limits on these soil levels, and as an interim step DOE will cover the soil with six to eight inches of topsoil. Ibid., at 92. Data provided by DOE subsequent to the hearing suggests even higher levels of

(Footnote continued)

o Data needed for long-term assessments. A wide variety of "contingency" information is needed in order to prevent untoward circumstances arising in the future that catch DOE and other interested parties unaware. DOE has resisted the notion that such "big picture" information was beneficial, or even necessary. For example, two of the more valuable pieces of information, according to the 1976-77 Elwood report, would have been a determination of the distribution of mercury by sediment size and organic content and a mapping of the mercury in surface sediments in the Clinch River System. According to the Branch Chief for ORO's Environmental Protection Branch, these recommendations were ignored because he "personally felt [they] could contribute nothing to the understanding of what was going on."[21] The scientists at ORNL confirmed that this not atypical DOE attitude frustrated their efforts to gather data; Dr. Auerbach of ORNL stated that the more information ORNL scientists gathered on mercury contamination, the more critical they became about DOE's limiting data collection to "routine monitoring" alone, basing their criticism on the view that such monitoring alone could not provide an adequate overall assessment of the problem.[22] Similarly, Dr. Gough (ORNL) recalled Jerry Elwood (ORNL) remarking in 1982 that Y-12 monitoring had been "poor and superficial" in the past. DOE now conceeds the value in collecting much of this data and has undertaken to obtain it.

There are basically three areas where this piecemeal approach to data collection has left serious gaps in DOE's understanding of the mercury problem:

o Temporal Trends of mercury contamination -- As Mr. Zeller stated at the hearing, perhaps the most important analytical question left unanswered is "whether the mercury levels are going up or down"[23] -- this is, whether 1983 levels represent the tail end of a problem that will recede in the future or whether levels may later increase in some areas. Current evidence on this question is equivocal. Based on geophysical evidence and hypotheses, Dr. D'Itri concluded that the local streams are well along in their natural purification processes and that as long as DOE ceases the ongoing discharge of small quantities of mercury from drains and pipes, this recovery should continue without incident.[24] Review of the documents provided to the Subcommittees show

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[20](continued)
contamination at some sites at the Jefferson Junior High School, e.g. 400 ppm.

[21]Hearing transcript, at 45-6 (Gore-Wing exchange).

[22]Ibid., at 145 (Auerbach).

[23]Ibid., at 69 (Zeller).

[24]Ibid., at 176 (D'Itri).

that the uptake of mercury in fish may not necessarily be decreasing. For example, that 1982 mercury levels in fish, while still generally below FDA limits, have generally crept upward slightly from 1977 and 1978 values in the same sampling locations.[25]

Mercury levels in fish need to be monitored carefully to discern meaningful trends. Indeed, there are several plausible mechanisms whereby either the transport or uptake of mercury could change in the future: (1) the spilled mercury could encounter acidic material in the saturated zone and migrate along with flowing groundwater; (2) a severe storm or flood could scour the bottom of EFPC or New Hope Pond and inject a large "shot" of mercury into the system,[26] or a similar event could redistribute mercury from possible "hot spots" in floodplain soils back into surface waters; (3) further downstream transport of contaminated sediments could expose the large fish in the Clinch River to elevated mercury levels, thus causing the appearance of individual fish with unacceptable mercury burdens; or (4) the rate at which bacteria biomethylate mercury could increase. In particular, if the mercury continues to disperse itself and if "hot spots" (as noted in the Van Winkle Report),[27] where mercury levels were too high for bacteria to survive become more hospitable to bacteria, methylmercury production in the local environment could rise even as total mercury levels fall.

- The "big picture" -- As mentioned before, DOE has, in the past, placed relatively little emphasis on developing a comprehensive picture of the fate of mercury in the environment, or on ensuring the validity of the isolated samples taken. In addition to the trend analyses recommended above, various witnesses suggested that DOE should undertake (1) a set of "mass balance" calculations to determine the partitioning of the discharged mercury into the various environmental media;[28] (2) a study to monitor the rate and extent of mercury removal from the environment;[29] and (3) a more comprehensive attempt to explain the wide variance in concentration data collected in the past at many of the sampling stations.

- "Interactive" information -- Finally, DOE needs to prepare documentation on the possible side-effects of its own future actions. In addition to studying obvious questions such as the effect of possible dredging actions on buried sediments, DOE needs to study the possible impact of improving the

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[25]See Appendix to hearing record.
[26]Hearing transcript, at 176 (D'Itri) and at 209 (Gough).
[27]See also Ibid., at 18 (LaGrone).
[28]Ibid., at 77 (Zeller).
[29]Ibid., at 163 (D'Itri)

quality of EFPC through changes in the sewage treatment plant or other remedial actions; if the creek becomes more hospitable to large fish, these fish could concentrate mercury to a much greater extent than the small bluegills which currently reside in EFPC.

In all of these efforts, DOE needs to pay particular attention to the presentation of its data. DOE's past efforts were not always thorough. For example, in Mr. Wing's comments on the Elwood report, he recommended simply ignoring several unusually high values for mercury contamination in sediment, stating that they "do not shed much light on the question."[30] Another example involves some of DOE's sampling efforts. From January 1974 through June 1977, DOE filtered the water samples it collected before analyzing for mercury content, and in the process may have lost a sizable fraction of the total mercury present in these samples since such a technique measures only solubile mercury.[31] Other potential sampling problems can occur which tend to underreport the extent of contamination as well. For example, if sediment samples are taken during the spring, the rapid water flow would tend to move mercury-contaminated sediments away from the sampling area; and efforts need to be made to sample stagnant or slower-moving areas of creeks and rivers, where mercury "hot spots" would most likely be found.

B. Other Pollutants

Issue: Are Oak Ridge residents exposed to an immediate health hazard from pollutant releases other than mercury, both historical and ongoing? Is there reason to believe that any long-term health hazards are associated with past or current chemical pollutant levels? If there is no cause for immediate concern, what monitoring and data collection activities are required to reduce any remaining uncertainties about the fate of the discharged material to protect the public health, safety, and environment and to provide a sound basis for whatever actions become necessary?

Findings:

4. If the ongoing sources of chemical pollution of groundwater, such as the S-3 ponds, New Hope Pond, and the various land burial sites, are cleaned up in a thorough and timely manner, there should be no imminent public health and safety hazards from chemical releases at Y-12, due to some of the

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[30] See Appendix to hearing record.

[31] LaGrone reply to supplemental question #24. See also Richmond and Auerbach reply to supplemental question #13.

same factors that mitigate the threats from mercury.

5. The potential for long-term harm to health from other pollutants at Oak Ridge is much harder to resolve. Although it is impossible, without a more specific understanding of the fate of the transport of chemical contaminants in groundwater, and a more extensive analysis of the problem, to provide complete assurances to the Oak Ridge residents that potential problems will not arise sometime in the future, timely and comprehensive data gathering and monitoring and the development and implementation of any necessary remedial plans will minimize the potential impact of such pollution.

6. There are a number of crucial deficiencies in both the scope and quality of the current data on chemical pollution at Oak Ridge. In order to correct these deficiencies, DOE will need to develop much additional data in order to comprehensively assess the problem and to develop and implement a plan for any necessary remedial action. In particular DOE will need to: (1) improve and expand its monitoring of groundwater; (2) conduct a broader overall assessment of the environmental fate of discharged material, both over time and across geographic location; and (3) establish new sampling points so that the potential entry of contaminants into potable groundwater or the human food chain can be quickly pinpointed.

Discussion

The primary focus of the Subcommittees' in-depth investigation and hearing was on mercury. During the course of the investigation and hearing, however, the seriousness of the other pollution problems as a potential health threat at Oak Ridge became evident. (Indeed such problems are generally now viewed as potentially more serious than mercury). The Subcommittees have therefore addressed questions about the other pollution-related concerns at Oak Ridge in this report, albeit less comprehensively.

Short-term Health Concerns

Witnesses at the hearing were more equivocal in their characterization of the immediate risk from waste disposal and non-mercury chemical pollution at Oak Ridge than from mercury. [For a discussion of the various waste disposal practices DOE has used and a brief review of existing data on chemical contamination, see page _____ to _____ of the Appendix.][32] All parties agree that there is substantial chemical

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[32]See also, hearing transcript at 22-25 (LaGrone); at 64 (Zeller); at 95 (Bruner); at 161-177 (D'Itri).

contamination by various organic solvents, radioactive wastes, heavy metals, and PCBs at the Oak Ridge Reservation, but as Dr. D'Itri said, "the human health and environmental significance of these loadings ... are simply not known."[33] Certainly, some of the same parameters (position of drinking water intakes, size of the buffer zone between the Y-12 plant and the nearest off-site population centers, and the absence of large or interconnected aquifers) that serve to minimize the actual public health effects of the mercury problem also serve to mitigate some of the potential health effects of other pollutants in the community. Despite the paucity of analytic data on the effects of substandard waste disposal in the S-3 ponds, New Hope Pond, the Waste Oil Landfarm, and other sites, all of the tangible evidence available suggests that these practices have not created an imminent health problem in the surrounding area. Environmental degradation on the reservation is however serious.

Long-term Health Concerns

The long term health and environmental effects of the pollution at Oak Ridge are not known. All the witnesses emphasized the need to collect much more data on these pollutants. Much of what has already been said about the need to collect data on mercury to develop a comprehensive overview is relevant here. Additionally, the witnesses were in general agreement that a comprehensive plan to gather data, monitor contamination (particularly in groundwater) and to develop and implement plans for necessary remedial action will greatly reduce any potential long term problems.

Data Deficiencies

Throughout the investigation and hearing, the Subcommittees and other interested parties were hampered by a lack of a comprehensive data base on which to do a rigorous assessment on the extent of existing environmental contamination and to estimate the future development of pollution problems. It is difficult to overstate the importance of a comprehensive data base to the handling of the potential problems addressed at the hearing.

o Data needed for short-term assessments -- As mentioned, data for the short term assessment is less complete regarding other chemical contamination than mercury. In the short-term, therefore, DOE needs to explore at least questions of groundwater contamination, in order to then make a reasoned shift into a longer-term outlook.

The groundwater data base must be expanded substantially. Mr. Zeller stated quite emphatically at the hearing that DOE needs "very, very badly"[34] to determine the nature of groundwater flow in the Oak Ridge area, the extent of chemical contamination, and the speed and direction of the movement of any contaminant plumes. Although existing data on chemical contamination of

groundwater is fragmentary, it definitely indicates cause for concern, with some chlorinated solvents present in levels thousands of times higher than EPA's suggested guidelines. As Dr. D'Itri noted, DOE has dumped both PCB-contaminated waste oils and halogenated solvents in several burial sites, and these wastes thin each other out and migrate rapidly into the water table. Moreover, Dr. D'Itri speculated that this migration could accelerate in the future if one or more of the bottoms of the S-3 Ponds literally fall out from all of the acids put into the ponds over the years. The lack of data available to the Subcommittees makes it difficult to assess the probability of such occurrences.[35]

Collection of groundwater data is especially important because DOE draws several million gallons of groundwater from beneath Y-12 each week, and returns a comparable volume of this water directly to surface waters. DOE needs to assess whether this practice either increases the contaminant load in surface waters or creates a cone of depression that could accelerate the migration of contaminants elsewhere in the system.

Long-term Assessment

DOE must begin to address data collection and monitoring of the chemical pollution and waste contamination from a long-term perspective at Oak Ridge rather than by generating isolated data efforts.

II. Issue: Did DOE and Union Carbide act responsibly in identifying the problems associated with the mercury and other pollutant releases, in carrying out requisite monitoring, and in taking appropriate remedial and other actions? Are DOE and Union Carbide cooperating with state and federal officials and informating the local citizenry regarding the mercury releases and other problems?

Findings:

7. DOE exercised poor judgement and did not act responsibly during the period 1977 through 1982 by failing to fully identify the problems associated with the mercury releases, and by failing to develop and implement any necessary monitoring and remedial action. UCND was guided by the DOE in its actions, or lack of actions, on the mercury contamination problem. Although not without blame for failure to aggressively pursue its recommendations, UCND did make appropriate recommendations for follow-up which were

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[33]Ibid., at 167.
[34]Ibid., at 70 (Zeller).
[35]Ibid., at 169 (D'Itri).

not acted upon by the DOE.

8. Since at least 1977 and through at least 1982, DOE released incomplete and misleading information about mercury to the public and to other governmental agencies and failed to cooperate with the public and other agencies in developing a thorough assessment of and plan to address the mercury problem.

9. Early in 1983, DOE instituted new practices and policies which are intended to cooperatively gather data on mercury, to develop any necessary remedial plan, and to provide timely information to interested parties, and these measures constitute a reasonable first step toward fulfilling their responsibilities for the mercury problem.

Discussion

It is clear that responsibility for failing to fully assess the mercury problem at Oak Ridge, to take appropriate remedial action and to fully and accurately inform the public and governmental agencies rests squarely with the Department of Energy. From the Subcommittees' investigation and the hearing testimony, little doubt is left that those in responsible positions at the DOE knew about the mercury contamination and failed to act appropriately. Indeed it is inconceivable that DOE's and UCND's actions at Oak Ridge over the 10 year period, could have occurred without the knowledge of those in charge at ORO and DOE. It is also questionable as to whether UCND fully discharged its responsibility in this matter. UCND had substantial knowledge about the mercury problem at Oak Ridge, indeed many recommendations were made by UCND to ORO for follow-up. Ultimately, however, the full responsibility must rest with DOE. While DOE's actions can perhaps be understood in terms of its sense of mission (see discussion under Issue 5), they cannot be excused.[36]

Fortunately, since early this year, with the arrival of a new a operations manager at ORO, DOE has shown a willingness to address seriously the mercury pollution issue, and has made great strides in establishing a constructive relationship with interested parties and providing timely and accurate information to the public.

Failure to Fully Identify and Follow-up the Mercury Contamination

Since at least 1977, DOE and UCND, were aware of the fact that substantial amounts of mercury had been lost to the environment from the Y-12 plant operation and that high ambient levels of mercury had been found in the EFPC and floodplain.[37]

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[36]Similar sentiment was echoed by Mr. LaGrone, hearing transcript at 276.

DOE exercised poor judgement and did not act responsibly when it failed to take appropriate action, including (1) the development of a comprehensive data base to assess the environmental and health threat posed by the contamination, and (2) the development and implementation of any necessary monitoring and remedial plan.

Prior to 1977, DOE had some data indicating mercury contamination in the EFPC.[38] Indeed it was common knowledge around the Y-12 Plant, at ORO and in Oak Ridge generally, that there had been several large mercury spills and discharges at Y-12 during the 1950s and 1960s.[39] It is doubtful however that the residents of Oak Ridge generally appreciated the environmental fate of the mercury or the potential environmental or health problems associated with it. In 1977, ORNL, at the request of DOE, conducted a study of mercury in Poplar Creek. ORNL's report, the so-called, Elwood Report, identified significant mercury contamination of fish in Poplar Creek and made recommendations for follow up studies that would have, if undertaken, provided needed data to access the extent of the mercury problem.[40] To the extent either DOE or UCND were not on notice about the potential mercury problems prior to 1977, the Elwood Report should have galvanized DOE into action.[41]

Also during 1977, UCND conducted an inventory of the mercury used at the Y-12 Plant. Because of concerns about national security, the report was classified and made available to only a limited number of persons in DOE and UCND.[42] The inventory report was reviewed and a declassified version was released in 1983 as a result of a Freedom of Information Act (FOIA) request. The unclassified version of that report estimates that 2.4 million pounds of mercury were unaccounted for at Y-12 and are presumed lost into the environment at Oak Ridge, primarily in the EFPC, under the Y-12 Plant and as airborne emissions. Taken together these two documents -- the Elwood Report and the Mercury Inventory Report -- leave no doubt that the responsible persons at DOE and UCND knew or should have known that a potentially serious mercury pollution problem existed. The responsible course of action would have been to make a

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[37] Ibid., at 44 (Wing); at 145-147 (Auerbach).

[38] Id., see also, The Reece Report, (1974), ORO/EPB.

[39] Hearing transcript at 251, (Bissell).

[40] Ibid., at 40-42.

[41] Dr. Gough, a former ORNL employee, testified that the original scope of the Elwood Report was to include the EFPC and that DOE subsequently excluded EFPC from the study. Though UCND had some initial interest in publishing the Elwood Report, it was not made public because DOE classified the report, "business confidential". (See Wing memo to ORO, 1977.)

[42] ORO's manager has undertaken substantial effort to refine the 2.4 million pound estimate, which is generally recognized as an upper limit estimate. Whatever the exact amount, it is clearly substantial. Hearing transcript at 16-17. (LaGrone).

thorough assessment of the transport and fate of the mercury and its impacts on the Oak Ridge environment and health and to provide timely and accurate information to the public and to appropriate governmental agencies.

According to Chairman Gore, the issue of why DOE took little or no action on the mercury problem between 1977 and 1982 is second in importance only to the immediate public health questions.[43] Mrs. Lloyd made it clear that DOE's performance as a "just steward" in discharging its responsibility was an important issue for the Congress' evaluation.[44] The testimony strongly suggests that DOE did not begin to take appropriate action until mid-1982, when DOE commissioned Webster Van Winkle of ORNL to perform a one-month survey of mercury levels in EFPC.[45] Several witnesses suggested that DOE was only stirred into action in 1982 by the impending possibility that the public might become aware of the sampling results of Stephen and Larry Gough, which documented unprecedented mercury levels in plant life near EFPC. This would appear to be a correct interpretation.

According to the ORO, EPB Chief, however, during the period in question, DOE was "biding our time, waiting for reliable information."[46] DOE has not produced any significant testimony to substantiate serious DOE efforts to generate this "reliable information" during the five-year hiatus. Since the isolated sampling programs of the late 1970s and early 1980s generally verified these unusually high levels of mercury, it is unclear what "reliable information" DOE was awaiting. A brief discussion of the events from 1977 through 1983 serves to place DOE's and UCND's actions in perspective.

Elwood Report

The 1977 ORNL Elwood Report, which identified significant mercury contamination of fish in Poplar Creek,[47] should have galvanized DOE into approving the appropriate follow-up actions, regardless of any perceived need to protect the information from release to the public. UCND made recommendations for appropriate

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[43] IBID, at 7. The extensive gaps in the DOE's data base on mercury discussed on p. 35-43, attest to the fact that DOE did not aggressively study the mercury contamination problem. Interestingly, during this same time period, ORNL (at DOE's request) was conducting extensive studies on fate, transport, and effects of mercury in the Holston River in Virginia and the Almaden Mine in Spain.

[44] Hearing transcript at 3.

[45] A chronology of major DOE actions relating to mercury was developed by the Investigations and Oversight Subcommittee, it is contained in the Appendix.

[46] Ibid., at 45 (Wing).

[47] Written testimony of Richmond and Auerbach at 27.

follow-up in the Elwood Report which were not approved by DOE.[48] These follow-up recommendations were made by ORNL even in the absence of specific knowledge of the 1977 inventory report,[49] although it was widely known in Union Carbide that there was some mercury contamination attributed to the Y-12 Plant. Given the highly respected scientific talent at ORNL, DOE's failure to follow-up the Elwood recommendations is puzzling.

From a possible health and safety standpoint, DOE's assessment -- that there was no danger to public health -- may be fortuitously correct, but it was certainly a very risky conclusion in the absence of far greater study and verification.[50] Additionally, from an environmental pollution and degradation perspective, there was no excuse for failing to study the mercury contamination as recommended in the Elwood Report. In this respect, such omission constituted an abuse of the trust placed in the DOE to attend to its own environmental pollution problems. There also appears to be some inconsistency in DOE's position -- that follow-up was unnecessary since no problem existed -- since, if DOE officials were confident that the unclassified data supported their characterization of the mercury problem as "relatively insignificant,[51] why was all this data not made available to the other agencies?

Other Monitoring Actions 1971-81

From 1971 through 1981, DOE published and disseminated information on mercury concentrations in fish, water, and sediments in the Oak Ridge area but the data focused on the areas surrounding the Oak Ridge gaseous diffusion plant, and not the Y-12 facility or the EFPC. Some of these reports showed anomalous levels of mercury, but the data were not evaluated in such a manner as to raise an alarm about the continuing problem of mercury contamination.[52] It is interesting to note that these reports were distributed annually from 1971 through 1982 to a number of individuals who one would have anticipated would have known the significance of the raw data.[53] Those people included respresentatives of the Tennessee Valley Authority, the Tennessee Department of Public Health, the Federal Environmental Protection Agency, et al. The fact that they did not recognize the significance of the problem in the face of the raw data, however, can probably be explained, as the case of the TVA, partly because

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[48]Testimony of Richomond and Auerbach at 27.
[49]Hearing transcript at 178 (Richmond).
[50]While it is generally conceded that mercury does not currently present an imminant health threat to Oak Ridge, it is unclear what impact the pollution had in the period 1950-1980.
[51]Memo, Jerry Wing to TVA, 5/6/77.
[52]Hearing transcript at 117 (Freeman).
[53]For example TVA has had significant experience with mercury detection in the Holston River and Pickwick Lake.

of the fact that the total quantity of mercury released had not been made public by the DOE. It may also be explained by the fact that some of these documents may not have been received by the appropriate people or evaluated by them.

1982-1983: The Goughs, the Van Winkel Report, Posting of EFPC

On April 30th of 1982, DOE commissioned the ORNL to perform a one-month survey of mercury level in EFPC. Several witnesses suggested that DOE was only stirred into action at this time by the impending possibility that the public might become aware of the sampling results of Stephen and Larry Gough, which documented unprecedented mercury levels in plant life near East Fork Poplar Creek. This assessment would seem to be correct because on April 20, 1982, ten days before the study was requested, Gough's supervisors and the Director of Technical Services and Plant Protection at the Y-12 plant, met to discuss the results of Gough's sampling.[54]

The Van Winkle report finalized in September 1982, concluded that there was a currently active source of mercury in EFPC, and that there was mercury contamination of the small fish population, and high mercury concentrations at some sample sites in the stream sediment, the floodplain and in foliage. The report made several recommendations for the gathering of additional data.

In October and November of 1982, the TDHE conducted inspections at Y-12 under the Clean Water Act and noted concerns about the surface and groundwater conditions and hazardous waste disposal practices at Y-12. In November of 1982, a local newspaper made a Freedom of Information Act (FOIA) request on all mercury spillages and emissions at the Oak Ridge complex. And, also in November, the TDHE, in the face of continued DOE opposition, closed the EFPC to fishing as a result of mercury contamination. In response to the FOIA request, DOE provided, in May 1983, a non-classified 1966 investigative report, and a declassified version of the 1977 mercury inventory report.

This record clearly supports the conclusion that DOE failed to identify fully and undertake appropriate follow-up of the mercury pollution from at least 1977 through 1982.

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[54]Stephen Gough subsequently left the Oak Ridge National Laboratory on June 18, 1982. Dr. Gough has since filed a complaint with the DOE Inspector General requesting a review of the circumstance surrounding his departure. Mr. LaGrone has, in his request to the I.G., made a similar request and has also offered to reinstate Dr. Gough. The I.G. report is expected to address this issue in depth. See hearing transcripts at 39, 54 (LaGrone); at 207 (Gough).

Disclosure of Information to and Cooperation With the Public

DOE's actions concerning public disclosure of the mercury problem can be divided into two time frames, pre-1983 and 1983. Before 1983, DOE's actions can in their best light, be described as inadequate to convey to the public the extent and potential seriousness of the mercury problem. With the arrival of a new operations manager at ORO in early 1983, DOE has commenced a policy of timely and accurate public disclosure.

Pre-1983

Mr. LaGrone admitted that it was his impression that environmental reports issued by the DOE prior to 1983 were "defective" and that they "could have done a far better job in portraying the actual mercury situation at Oak Ridge."[55] Some witnesses testified that part of the problem of disclosure originated in the need to ensure the protection of national security information relative to the work conducted on the hydrogen bomb at the Y-12 facility.[56]

Dr. Richmond explained that mercury contamination was reported in various environmental reports and that these reports were "widely distributed within the constraints of national security..."[57] Undoubtedly, the decision to restrict the distribution of the 1977 mercury inventory report because of the sensitive information included in it, provided a convenient shield behind which the non-sensitive but politically volatile data on the quantity of mercury releases could be buried and obscured. Most of the information dealing with the amount of mercury discharged was not national security information and it could have, and should have been released.

The public witnesses at the hearing were most concerned about three aspects of DOE's previous actions regarding public disclosure of information: 1) failure to provide certain critical information in a form accessible to the public, or failure to provide such information in a timely fashion; 2) inadequate or misleading statements and characterizations in public statements and releases; and 3) an alleged patronizing attitude towards Oak Ridge residents not holding professional positions at ORNL or UCND.

(1) The Public. At the hearing, Chairman Gore expressed concern about the the "attitude toward confidentiality" at DOE in which "the need for confidentiality in the weapons program sort of bled over into an assertion of confidentiality into areas where it was maybe just more convenient to do it."[58]

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[55]Hearing transcript at 33 (LaGrone).
[56]Written testimony of LaGrone, pp. 5-6, hearing transcript at 253 (Bissell); at 258 (Ginsburg).
[57]Ibid., at 174 (Richmond).
[58]Ibid., at 189 (Gore).

For example DOE was questioned about the decision not to make the 1977 Elwood Report public and the "business confidential" designation attached to the report.[59] Since the report does not have any particular relevance to the details of the weapons production process at Y-12 (unlike the 1977 mercury inventory report) the rationale for the ORO's decision to keep the report secret is unclear. There is however some information to indicate that a concern for public relations was of major importance.[60]

Other witnesses questioned DOE's failure to provide a full environmental impact statement (EIS) for Y-12, because of the reduced opportunity for public hearings and comment when only an "environmental assessment" is prepared. The record for DOE's decision to publish an assessment rather than on EIS, suggests as well concerns about public disclsoure of the mercury problem if an EIS were prepared.[61]

Dean Rivkin of LEAF was particularly critical of the content of the one EIS that DOE published in draft form. DOE was required to publish the EIS when it considered selling a portion of the Y-12 area to the U.S. Synthetic Fuels Corp. In this report, DOE discussed at length the possible impacts if radioactive materials in sediment were disturbed during dredging of the Clinch River. The report did not mention, however, that there were also high concentrations of mercury in that sediment.[62]

Other witnesses were less critical of DOE and believe that those living at Oak Ridge had some substantial information about mercury pollution. Testimony from DOE and others substantiate the fact that there was general knowledge in Oak Ridge about some mercury pollution. For example, the former Mayor of Oak Ridge (and a UCND employee), Mr. Bissell, stated that the problems with mercury spills were not kept secret. He noted an April 1966 article in a local newspaper[63] that elaborated on a spill of a large amount of mercury at the Y-12 Plant. He stated that at that time, the media was not concerned as much about health as they were about the fact that the mercury was, to quote a Knoxville newpaper, a "$300,000 boo-boo." It was his opinion that those who talk about cover-ups or negligence "just plain do

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[59] Ibid., at 188.

[60] See fn. 35 at 50. [Mr. LaGrone testified at the hearing that the Inspector General was expected to look into the issue of why the Elwood report was kept confidential, but no satisfactory rationale was put forth at the hearing].

[61] Ibid., at 229-230 (Rifkin); see also Appendix to hearing record; hearing transcript at 237 (Gough); also fn. 35 at 50.

[62] Ibid., at 228.

[63] Hearing transcript at 234.

not know what they are talking about."[64] While it is not open to substantial question that such news reports and various ORNL reports gave the public information about mercury, substantial question exists as to whether the extent and scope of the problem was made public. The record as a whole does not appear to support the position that the extent and potential problem associated with the mercury releases were fully disclosed or presented to the public in a manner so as to provide a comprehensive picture to the public. Indeed DOE could not have presented a full picture to the public during the 1970s, a period when environmental issues became of great public concern, because of its generally inadequate efforts to gather the necessary data.

(2) Inaccurate Disclosures. Where DOE did make reference to mercury and other contamination in published documents, the information generally appeared in an ambiguous, incomplete, or misleading fashion. For example, Dr. Richmond (ORNL) noted at the hearing that the 1977 Y-12 environmental monitoring report (which was made available to EPA and the local news media) did at one place made reference to "higher-than-background mercury concentrations in creek sediments,"[65] but later acknowledged that the reports did not offer an "explicit [or] unambiguous statement of some of the key problem areas."[66] For example, while one table (p. 59 of 1977 report) shows mercury concentrations in Poplar Creek sediment ranging from 0.3 to 153.6 ppm, there is no indication that those outside of the technical community would recognize that some of these values (or other values for uranium, lead, chromium, etc. in the same table) are in any way unusual. Another noteworthy example was revealed in October 1982 by the Y-12 plant manager, Gordon Fee. DOE had circulated and was considering publishing an Environmental Assessment for Y-12 prepared by Battelle Memorial Institute. Even though DOE officials had known since the mid-1970s that EFPC and Poplar Creek sediments near the Clinch River contained up to 300 ppm mercury, the 1982 Battelle report said that stream sediment contained only 25 ppm total mercury or less. When Fee read the draft of the 1982 Van Winkle[67] report on mercury contamination in EFPC and Bear Creek, he realized that the results "differ[ed] quite markedly from those reported in the... March 1982 Y-12 Environmental Impact Assessment," and specifically notified ORO of the descrepancy.[68] The Y-12 assessment was

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[64] Ibid., at 235.
[65] Ibid., at 184 (Richmond).
[66] Ibid., at 187 (Richmond).
[67] In mid-1982, as a result of the Gough incident, ORO asked ORNL to conduct a study of the EFPC. The Van Winkle report was finished in September 1982.
[68] Letter from FEE to Hickman, October 1982; see also, hearing transcript at 34, 38.

subsequently published by DOE without correction or clarification.

(3) A final area of concern regarding DOE's relationship with the public was raised by several of the witnesses, and relates to DOE's handling of sensitive social and public health issues. In particular, some residents of the Scarboro community were upset at DOE's repeated insistence that contaminated fish did not present a health threat because Oak Ridge is "a relatively affluent city..., populated by scientists and engineers who have other life pursuits than habitual sports fishing."[69] As Mr. Fuzzell asserted, poor black residents have depended on the local fish for subsistence for many years, and their children have long resorted to playing in area creeks for lack of other recreational opportunities.[70]

Present

DOE's public responsiveness has greatly improved during this year. In unanimous support of the Department of Energy's present policies at the Oak Ridge Complex concerning cooperation and dissemination of information to the local citizenry, most all the witnesses applauded the new Director of the DOE/ORO for instituting new policies which fostered both cooperation and timely information releases on the environmental issues of concern to the public. For example, Mr. Ginsburg, President of the Oak Ridge Chamber of Commerce, said that we should not "allow the secrecy and security of [the former] era to linger in today's world," and praised DOE for recently "being open, cooperative with all interested parties, and willing to do anything possible to determine what the effects might be."[71]

In addition to DOE's cooperation with state, local, and federal agencies (discussed below) DOE has and is now (1) regularly releasing to the public copies of its monitoring reports, test data, contractor reports and has established a public reading room for the mercury information in the Oak Ridge Library; (2) meeting with Oak Ridge citizens and official groups to provide detailed information on the mercury situation. As previously noted DOE has requested the Inspector General at DOE to conduct a thorough investigation of the mercury problem. The Inspector General's report will be released to the public.[72]

Mr. LaGrone's leadership has recently provided several other

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[69] New York Times, 26 March 1983. See also hearing transcript, at 212-214.
[70] Id., see also hearing transcript at 221 (Weaver).
[71] Ibid., at 257-8 (Ginsburg).
[72] Ibid., at 13-15 (LaGrone).

promising indications of a new attitude at DOE: 1) the creation of a 12-member "Oak Ridge Environmental Task Group" to troubleshoot problems at Y-12 and other ORO facilities, and to arrange for consultation with outside experts; 2) the DOE offer to sample soil or water for any resident concerned about mercury contamination on his or her property; 3) the DOE request for the U.S. Center for Disease Control to review existing health data and advise DOE on what other studies need to be conducted.

Disclosure of Information to and Cooperation with Other Governmental Agencies

As with DOE's attitude toward the public, there is a distinct change in DOE's posture in 1983. Whereas prior to 1983, DOE was generally viewed as uncooperative and to have provided (in hindsight) incomplete or inaccurate information on the mercury contamination to other governmental agencies, DOE is now viewed as a partner.

Disagreements over the applicability to DOE of certain State and Federal environmental laws have greatly complicated the relationship between DOE and other governmental agencies during the past decade.[73] While there is no doubt, given the existing environmental conditions at Oak Ridge, that DOE has not in the past complied with the spirit of some state and federal environmental laws, the testimony also indicates that DOE has not been as cooperative or forthcoming as it should have been, on the mercury question. It is also fair to say that neither EPA nor the TDHE were particularly vigilent in fulfilling their statutory responsibilities by seeking additional information from DOE or in enforcing existing laws at Oak Ridge.[74]

Pre-1983

Several examples are illustrated of DOE's lack of candor and cooperation with other agencies during the pre-1983 period.

EP Toxicity Test

In late 1982 DOE transmitted to EPA Region IV an edited version of the new data on mercury levels in soils and sediments near EFPC. Although DOE had values which ranged up to 83 ppm, more than 10 meters away from the bank of the creek itself, and up to 480 ppm in bottom sediments of the

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[73] The nature of the disagreement are discussed under Issue IV.

[74] The record contains additional examples of a lack of vigilance on the part of governmental agencies, particularly, EPA involving the disposal of hazardous wastes and the NPDES permits. See hearing transcript at 83-84 (Zeller).

creek (background levels are usually 1-5 ppm), DOE sent EPA only data from an "EP Toxicity" test on the soil and sediment samples. These data were not meaningful because they could not provide any information on the aggregate effect of all the mercury present in the system.[75] EPA did not receive the meaningful data until March 1983, when TDHE sent EPA the full version of DOE's sampling results.

TVA. DOE's dealings with TVA in the late 1970s were the subject of considerable examination at the hearing. It appears from the record that DOE was less than candid with TVA, and may have sought to keep TVA out of the picture. Although the investigation and hearing provided substantial evidence regarding the interchanges between DOE and TVA, the DOE Inspector General's report will likely give a more detailed account of exactly what happened at the two agencies. Certain aspects of this relationship do seem clear from the evidence available now, however:

1) DOE resisted involving TVA. The 9 February 1977 ORO Environmental Protection Branch (EPB) weekly report, for example, states that EPB tried to convince DOE headquarters to allow EPB to prepare only an "environmental assessment" [rather than a full environmental impact statement (EIS)] for the Oak Ridge facilities, for several reasons. Among the reasons offered was that an EIS would entail "the probable need to drag TVA in" and that it would be "awkward" to discuss with TVA the mercury in fish found near ORGDP because it might force DOE to mention that the mercury itself may have come from Y-12, a defense facility.[76]

2) DOE did not give TVA data from fish in EFPC, where mercury levels were found to be the highest in the system. According to Ralph Brooks of TVA, DOE did not mention EFPC when Brooks asked where the mercury was most likely coming from. Thus, TVA claims that not only was it unaware of the volume of mercury in the system, but it had no reason to suspect that there was any continuous active source of mercury deposition. In fact, Brooks claimed at the hearing that DOE had advised TVA that they "should not be looking too carefully at EFPC, and so we looked downstream from there,"[77] in TVA's 1977 sampling survey.

3) DOE provided only excerpts from the 1976-77 Elwood report to TVA. DOE correspondence indicates that before submitting the Elwood Report to TVA, DOE deleted "speculative" and "irrelevant" portions of the report. The deleted material included a statement that DOE did not know whether the elevated mercury levels were due to recent releases from

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[75]Staff conversation with D'Itri.
[76]See Appendix to hearing record.
[77]Hearing transcript, at 28 (Brooks).

Y-12 and ORGDP or to previous releases retained in the sediments, as well as Elwood's conclusion that DOE did not "fully appreciate the significance" of elevated mercury levels found in fish in 1970 and 1971. Moreover, DOE did not send to TVA the section of the Elwood report where specific recommendations were offered. In addition, DOE provided TVA data largely given in the form of averages, rather than indicating the range of levels found. Thus, in addition to the areas from which TVA received no data, TVA also did not see some of the high data points DOE did obtain from mercury "hot spots" in the Oak Ridge area.

TVA Director Freeman summarized the effects of DOE's abridged communications by telling Chairman Lloyd that if DOE "bring[s] some people in and ask[s] them for help, but do[es] not tell them what the basis for alarm might be, you should not be surprised that they were not alarmed."[78] Chairman Gore echoed this position, referring to DOE's efforts as providing only "part, and not the major part, of the jigsaw puzzle" to TVA.[79]

Finally, the TDHE expressed its difficulty in obtaining accurate information on mercury from DOE.[80]

1983

Since DOE brought in a new Director of the Oak Ridge Operations Office in early 1983, ORO has begun to act in a responsible fashion in addressing the mercury problem and has been forthcoming with other agencies. Both the TDHE and EPA have stated that DOE is now fully cooperating with their requests for information on mercury the Oak Ridge Complex.

The primary example of DOE's new attitude toward other agencies is the Memorandum of Understanding (MOU) DOE entered into in May, 1983 with EPA and the TDHE. The MOU has been greeted by all as an important first step toward developing the data needed for assessment of the mercury and other problems at Y-12, and toward the development of any necessary remedial plans.[81]

III. Data Collection and Remedial Actions

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[78] Ibid., at 125 (Freeman).

[79] Ibid., at 129 (Gore).

[80] For example, TDHE had difficulty obtaining complete information on the mercury levels found in the EFPC. See TDHE letter to Wing, February 1983, Appendix to hearing record.

[81] Ibid., at 63 (Zeller); Ibid., at 98. The MOU extensively addresses data, monitoring and development of remedial plans for Y-12. It does not however mandate a resolution to any problems, but instead is seen as a working document for cooperation and planning.

Issue:

A. Mercury -- What steps should be taken to ensure that: (1) the collection of additional data on mercury contamination; (2) the assessment of the mercury pollution problems at the Reservation; and (3) the development and implementation of any necessary remedial actions, proceed expeditiously and in a manner that enhances the credibility and scientific integrity of these efforts?

Finding:

10. The current framework of agreements and commitments by the Director of the Oak Ridge Operations Office, the EPA and the TDHE, is a good first step toward ensuring the collection of necessary data on the mercury contamination problem. Assuming the current atmosphere of cooperation continues, it is likely that a full assessment and resolution of the mercury problem will be achieved.

11. The establishment of an independent peer review panel to oversee data collection, analysis, and remediation will help to enhance DOE's scientific capability and restore the scientific credibility of the DOE with the local community, public, and generally with other agencies.

Discussion

Resolution of the Mercury Problem. There is substantial reason to believe that resolution of the mercury problem is now and will continue to be addressed seriously by DOE. However, because of its past actions, DOE's credibility and trust have been greatly erroded, not only among these traditionally more skeptical of DOE's activities, but also among those, particularly in the Oak Ridge Community, who have been the staunchest supporters of DOE/ORO and its mission. A major effort to enhance the credibility of DOE's environmental decisions will be necessary.

As Chairman Gore said at the conclusion of the hearing, the most important outcome of the investigation and hearings will be to "mobilize... an impressive effort to change practices, to change the circumstances that exist and make certain that we do it right in the future and move forward quickly."[82] As such, the scientific integrity and credibility of any data collection and remedial planning from this point onward becomes the most important challenge facing DOE and the Oak Ridge community. Mrs. Lloyd acknowledging this fact, applauded Mr. LaGrone for his positive attitude and "willingness to... bring about remedial action."[83] Indeed, while nearly all of the witnesses were optimistic about Mr. LaGrone's influence on improving DOE's candor and responsiveness, some of the witnesses were careful to distinguish the relatively straightforward challenge of being

more open in the future from the more problematic challenge of changing ingrained physical practices and embarking on what may need to be ambitious and costly remedial programs. As Mr. Rivkin clarified under questioning, it is likely that "one individual or even a group of individuals cannot correct what I believe is a systemic institutional problem in compliance with environmental laws."[84] Again, as Dr. D'Itri's previously-quoted remark indicates,[85] the very seriousness of the substandard waste management practices at Y-12 suggests to some that the officials responsible for these practices can never fully appreciate the urgency of the need to make changes.

Nevertheless, there are several concrete reasons for optimism that the necessary first steps -- cooperative plans for data collection -- have been made towards improving the mercury data collection and resolution of the mercury problem at Y-12.

First, and most importantly is the Memorandum of Understanding between DOE, EPA, TDHE signed in May 1983. The MOU provides the framework and milestones for a systematic and cooperative collection of data and assessment of the mercury and other problems at Y-12. It is viewed by all parties as a major first step toward Oak Ridge becoming a good environmental neighbor.[86]

Additionally, DOE has commissioned a study of the groundwater patterns and contamination under Y-12, has proposed a plan to conduct subsurface investigations for the spilled mercury, and has begun a program to clean out drain lines contaminated with residual amounts of trapped mercury.

Despite this progress, however, many of the witnesses were convinced that without independent expert oversight of future data collection and environmental assessment efforts, the Y-12 cleanup and modernization will not proceed in a sufficiently thorough and timely manner. Witnesses pointed to at least six reasons for opening up the sampling, assessment and remedial activities to expert review and public oversight:

o the difficulties DOE has had in the past gathering complete, appropriate, and reproducible data on environmental contamination;

o the sentiment on the part of some observers that a government agency or its prime operating contractor should not be allowed to monitor its own environmental performance;

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[82]Ibid., at 279 (Gore).
[83]Ibid., at 26 (Lloyd).
[84]Ibid., at 247 (Rifkin).
[85]Ibid., at 174 (D'Itri).
[86]See e.g., statements of LaGrone (Ibid., at 31-32), Mr. Zeller (Ibid., at 63), and Dr. Bruner, Ibid., at 110).

o the sentiment on the part of some observers that if sampling uncovers additional problems or more serious conditions, "DOE-ORO [will not act] in the long-range best interests"[87] of Oak Ridge and Scarboro residents;

o the concern that the planned growth and progress of Oak Ridge will be hampered by any remnants of a "coverup shadow";[88]

o the concern that EPA oversight alone is not sufficient to ensure prompt compliance, given that some witnesses feel EPA has "abused its discretion"[89] by allowing inadequate NPDES permit conditions to persist for so long;

o most importantly, the concern that the MOU is so open-ended, and imposes so few unambiguous requirements on DOE, that it provides a framework that could lull the community into believing that conflicts are being resolved and progress is being made in the absence of concrete action [or in the presence of visible, but ultimately suboptimal actions].[90]

Peer Review Panel

To address some of these concerns, Mr. Gore and Mrs. Lloyd and a number of witnesses introduced the concept of establishing an independent peer review panel to oversee data collection and remedial assessment, and to help formulate specific plans to further the general objectives of the MOU. The specifics of this proposal are discussed in the recommendations section of this hearing report; it is important to record at this point, however, the degree of support for this concept among outside witnesses and within DOE.

Mr. Joe LaGrone and Mr. Rivkin provided the strongest support at the hearing for the peer review concept. LaGrone, responding to a question from Mr. Gore, stated that:

> "There are advantages to having outside scientifically technically qualified people to review the work that has been done in terms of making assessments. I believe that can be further shored up by holding some public meetings to discuss the findings and give the community an opportunity to hear the input and to raise questions."[91]

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[87] Ibid., at 221 (Weaver).
[88] Ibid., at 253 (Bissell).
[89] Ibid., at 232 (Rivkin).
[90] Mr. Barry Sulkin of the TDHE described the shortcomings of the MOU: "The MOU is basically a study document. It sets our programs to look at the problem. It does not say everything that is illegal will stop. That is where it falls short." Ibid., at 110.
[91] Ibid., at 59 (LaGrone).

Rivkin offered that there was a "striking analogy" between the Oak Ridge situation and the mid-1970s litigation over TVA's sulfur dioxide emissions. In the TVA case, a task force composed solely of TVA and EPA representatives "deadlocked," according to Rivkin, but when outside experts and interested citizens were brought into the process, resolution was reached.[92] [Since the hearing, EPA and DOE officials contacted by the staff of the Subcommittees have generally expressed approval for the concept of bringing in an interdisciplinary committee of scientists to help these agencies interpret the data a reponsible party generates about a pollution incident. The Subcommittees believe that there is good reason for such an outside Committee, including both the public's inherent skepticism about a "closed" process involving only scientists with ties to EPA or DOE or the responsible party, as well as EPA's inability to bring to bear all of the wide range of capabilities necessary to accurately evaluate sampling procedures, data interpretation, and remedial plans.]

Issue: (B) Other Pollutants

What steps should be taken to ensure that: (1) the collection of additional data on mercury and other contamination; (2) the assessment of the pollution and waste disposal problems at the Reservation; (3) the development and implementation of any necessary remedial actions, proceed expeditiously and in a manner that enhances the credibility and scientific integrity of these efforts?

Finding:

12. Enhancing DOE's waste management and pollution control practices and restoring DOE's credibility will require implementing significant institutional and operational changes in the way the Oak Ridge Operations Office manages its waste disposal and environmental control activities. DOE has begun to implement some changes that will help to remedy some existing environmental concerns. However, a sustained commitment and additional efforts including the broadening of the Memorandum of Understanding with EPA and TDHE to include pollution control and waste management problem will be necessary. A scientific peer review mechanism will also be helpful to enhance DOE's abilities and its credibility.

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[92] Ibid., at 224-5, 233 (Rifkin).

Discussion

Establishing environmentally sound and credible waste managment and pollution control practices at Oak Ridge will be a long-term, scientifically complex and costly process. While skepticism and questions remain in some quarters about DOE's wherewithall to follow up on its commitments to bring its pollution control and waste disposal practices up to current state of the art, there are several concrete reasons for optimism.

First, DOE's willingness to reprogram other funds to build the Central Pollution Control Facility (CPCF) is an obvious sign of the Department's awareness that alternatives to direct discharge of waste must be found.[93] In addition, DOE and EPA have informally agreed that the revised NPDES permits will include loading restrictions (i.e., a cap on the total quantity of each pollutant DOE can discharge each day, rather than simply a license to dilute whatever quantity is released), and will also require monitoring of the actual discharge pipes, rather than monitoring streams miles away at the boundaries of the reservation, so that Y-12 will no longer be virtually unique in these two key respects.[94] Finally, the MOU signed in May 1983 does provide an initial framework for establishing "thoughtful benchmarks that will serve as a model for looking at other environmental issues that we have here at Oak Ridge or maybe elsewhere in the country."[95] For the reason discussed under the previous finding, a peer review mechanism would greatly enhance DOE's activities. This is even more important given the necessarily long term nature of the commitment.

IV. Obstacles to Pollution Control

Issue: Are there statutory, historical, institutional, management, and personnel problems which have formed barriers or removed incentives to the implementation of modern pollution control and waste management techniques and the timely construction of needed pollution control facilities at the Oak Ridge Reservation?

Findings:

13. Although the Y-12 facility itself was built in the 1950s and thus imposes some technological limitations on DOE, DOE has not until now made a concerted effort to upgrade its waste management practices, some of which are out dated. This record is particularly disappointing because of the substantial progress many private-sector generators have

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[93] Ibid., at 22 (LaGrone).
[94] See Appendix___ to hearing transcript.
[95] Hearing transcript, at 31 (LaGrone).

made during recent years and because DOE has the qualified personnel at ORNL available to design and maintain improved state-of-the-art waste management techniques.

14. There does not appear to be any legal or structural barriers to DOE assuming appropriate environmental responsibilities in the future. Barriers and reduced incentives for implementation of modern pollution control and waste management techniques at the Oak Ridge Reservation have contributed in the past to an unwillingness or a slowness in DOE assuming appropriate environmental responsibilities. Barriers and reduced incentives include or stem from:

- o A mission orientation rooted in the national defense concerns of the 1950s and 1960s which resulted in a strong protectionist attitude at ORO and a failure to adequately incorporate environmental concerns within its mission.
- o A DOE organizational structure that does not provide for alternative policy avenues if the ORO manager is not strongly supportive of environmental concerns.
- o The use of a facility built largely in the 1950s, and the continued use of outdated and environmentally unsound disposal practices, all of which will now require major additional funds to clean up and bring into compliance with modern pollution control and waste management practices.
- o The absence of a stringent EPA and TDHE permitting and enforcement effort directed at Oak Ridge.

15. Sustained DOE commitment and Congressional support will be necessary to ensure that Oak Ridge brings its waste disposal and pollution control practices up to the state-of-the-art.

Discussion

DOE's Oak Ridge Reservation is a major scientific and defense related institution and as such provides support for important national interests. However, major environmental problems do exist at Oak Ridge as a result of years of unsound environmental practices. Such practices must cease and necessary remedial actions must be undertaken in a timely manner; but as Ms. Lloyd noted in her opening statement, "I will not accept attempts to use these [environmental] issues as mere instruments for disrupting legitimate national defense activities."[96]

It was made clear from the testimony presented to the Subcommittees that the ORO organizational structure was deficient in establishing the appropriate environmental control priorities at the various facilities under their jurisdiction. For example,

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[96] Ibid., at 4 (Lloyd).

there was no centralized authority for environmental and waste management functions at the various Oak Ridge plants capable of establishing sufficient environmental control priorities as an integral part of these facilities.[97] Because these environmental requirements were regarded by the separate plant managers as competitive for scarce mission resources, they were often put on the "back burner". It is essential that the present ORO management reconstitute their environmental programs to assure their position as an integral part of each plant's mission, (Y-12, GDP, and ORNL) and that a centralized management structure within ORO has the authority to assure that the required waste management practices are implemented and functional.

Chairman Gore questioned the organizational structure and referred to the combination of organizational and personality factors as "the institutional arrangement ... [whereby] you have the source of the problem making value judgments about what is necessary to determine the extent of the problem."[98] Gore stated that this institutional arrangement "has just got to be changed," and Mr. LaGrone responded by agreeing that each program manager at ORO must become responsible not only for his programs, but for the safety and environmental concerns that accrue during the functions of his area. LaGrone emphasized however that the Environmental Protection Branch (EPB) and other support branches must take the lion's share of responsibility for passing on whatever information is necessary: "Safety and environmental responsibilities [must] start with the same people who must execute these programs."[99]

The facilities at Oak Ridge are stuffed with many talented and well respected scientists, including many with well recognized scientific expertise in environmental and health issues. The question of why Oak Ridge failed to act as a good environmental neighbor given its resource pool is rooted in the history of Oak Ridge and its failure to fully incorporate environmental concerns into its sense of mission. There is strong evidence to suggest that this attitude is beginning to

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[97] Ibid. at p. 52 (Hickman).

[98] Ibid., at 47 (Gore).

[99] Ibid., at 54 (LaGrone). The July 1982 "Comprehensive Appraisal of the Environmental Protection, Safety, and Health Protection Program of the Oak Ridge Operations Office," a public report of an evaluation conducted by DOE headquarters, concludes that "the overal performance of Oak Ridge in the area of hazardous waste management activities is considered to be OUTSTANDING" and claimed that "EPB has been effective in assuring radiological and environmental effluents are appropriately monitored and controlled." It is clear from the Subcommittees' investigation and hearing that these statements are inaccurate and reflect poorly on DOE's assessment of the problems at Oak Ridge.

change. Mrs. Lloyd summed it up most appropriately when she said, "The research expertise of the Oak Ridge National Laboratory in environmental, health and safety is unique and we must see to it that it is utilized to the utmost."[100]

The Subcommittees found that there are basically three types of problems which impede the upgrading of ORO's environmental program: historical, intra-governmental, and legal.

o Historical: Environmental Control at DOE Facilities -- Many of the waste management and pollution problems at the Oak Ridge Reservation, including the mercury problem, began in the late 1940s and 1950s when there was much less sensitivity to environmental problems than today. At that time, the prevailing attitude of the defense community, both within the DOE and the Congress, was that the national security mission of the Oak Ridge operations preempted other associated activities, such as implementing and maintaining an adequate environmental control program. Requirements for strict defense-related security procedures also discouraged and impeded meaningful outside oversight. These factors engendered a strong sense of mission at Oak Ridge and fostered a protectionist attitude within the Oak Ridge management structure which "bled over" onto DOE's non-defense related activities as well.

As a result, DOE has in the past resisted, on national defense grounds, and on legal and cost grounds, many environmental improvements and regulations which grew out of the increased environmental sensitivity developed since the late 1960s. (Questions concerning jurisdiction over DOD's defense related activities are discussed below).

For example, because of budgetary constraints, DOE in 1982, "reprogrammed" appropriated funds for the construction of a central pollution control facility. Apparently, DOE regarded this basic improvement to its waste management picture as being of secondary importance to traditional defense program functions, though DOE had maintained since 1973 that "the long-term solution... is construction of the central pollution control facility."[101]

DOE has been extremely slow to adapt to the national importance attached to environmental quality since the late 1960s. The process of incorporating environmental concerns into its sense of mission and acting on those concerns is now complicated because of the age of some of the DOE facilities at Oak Ridge (e.g., Y-12 was built in the 1950s) and the fact that certain environmentally unsound ORO practices have created disposal sites and other pollution problems which will most certainly entail substantial costs to assess and rectify.

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[100] Hearing transcript at 5.
[101] See Appendix ___.

As previously noted this attitude is beginning to change. Restructuring of the Oak Ridge Operations Office's environmental division, acquisition of new personnel, and establishment of appropriate lines of responsibilities and programmatic priorities are in progress at the several Oak Ridge facilities.[102] A spirit of cooperation with the civil environmental authorities is being fostered by the new ORO leadership.[103] It is imperative that these environmental control and remedial action-related programs proceed in a timely manner without jeopardizing the national security responsibilities of the Oak Ridge operations, while safeguarding the environmental interests.

The challenge facing the DOE and those responsible for effecting needed changes in environmental priorities at Oak Ridge is to remove these environmental matters from the national security umbrella, establish working relationships with the EPA and Civil authorities and commence a concerted program of remedial and corrective actions that will assure these authorities and the public that appropriate corrective actions are proceeding expeditiously.

- o Intra-Governmental: EPA Enforcement -- While the responsibility for the existing environmental conditions and practices at Oak Ridge rests squarely with DOE, EPA has not been vigilant in enforcing environmental laws at Oak Ridge. The question of EPA enforcement at Oak Ridge involves two separate issues: (1) Did EPA actively enforce compliance with applicable environmental laws and regulations at Oak Ridge? and (2) To what extent was DOE specifically exempt from EPA enforcement of certain environmental laws because of statutory exemptions arising from its Atomic Energy Act activities.[104]

Mr. Zeller of the EPA cited five Acts and an Executive order (Federal Compliance with Pollution Control Standards) that provide authority for EPA's oversight of Oak Ridge's environmental control operations. He acknowledged, however, that their day-to-day work load and the breadth of environmental problems they must deal with may have precluded EPA from aggressively pursuing their responsibilities at the Oak Ridge facility.[105] He also conceded that EPA had failed to aggressively pursue revision of the National Pollution Discharge Elimination (NPDES) permit required under the Clean Water Act.[106]

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[102] ERP Staff Report on ORO site visit (8/26/83).

[103] Hearing transcript at 30 (LaGrone).

[104] A discussion of the jurisdictional questions begins on p. 89.

[105] Hearing transcript, p. 85 (Zeller).

[106] 33 U.S.C. S 1251 et seq. Specifically, Mr. Zeller stated in response to questioning from Chairman Gore: "Perhaps we did not pursue that issue as diligently as we should have." Hearing transcript, at 84.

Moreover, he conceded that the fact that DOE has significant pollution and waste disposal problems at Oak Ridge and that existing waste disposal practices are not in compliance with federal waste disposal laws. This strongly suggests that EPA has not been aggressive in enforcing environmental laws at Oak Ridge.

Although the Subcommittees' investigation did not thoroughly review the question of EPA enforcement at Oak Ridge, however, significant questions were raised about the diligence of EPA's activity at Oak Ridge. As Mr. Zeller's statement suggests, there is some evidence that EPA was willing to conceed its legal responsibility for enforcement at Oak Ridge entirely to DOE.

Legal: Jurisdiction over DOE

Of significant concern to the Subcommittees in their investigation was the extent to which the various environmental laws are applicable to the Department of Energy's activities at the Oak Ridge complex, and concomitantly, the degree to which DOE has complied with these laws. Because certain of DOE's defense-related activities involve nuclear materials, which are regulated under the Atomic Energy Act,[107] the Congress has exempted particular activities from the provisions of some environmental laws. The scope and applicability of these exemptions to DOE's Oak Ridge activities has been a point of contention among DOE, EPA, and the TDHE for some time and has been a barrier to EPA and TDHE oversight at Oak Ridge.

The primary questions reviewed by the Subcommittee involved the application of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA),[108] better known as the "Superfund", and the Resource Conservation Recovery Act (RCRA),[109] the principal federal laws for controlling hazardous waste. Both acts regulate hazardous waste disposal: CERCLA works retrospectively to clean up existing hazardous waste sites, while RCRA seeks to ensure the safe disposal of currently generated waste. To a lesser degree, the Subcommittees also considered questions under the Clean Water Act (CWA).[110]

Because of the unresolved jurisdictional conflict, DOE did not cooperate fully with EPA in the past. For example, DOE resisted EPA requests for information or provided EPA with incomplete information: (1) DOE did not report any problems with mercury to EPA in 1981, although the CERCLA required all private- and public-sector generations to provide information on previous disposal and discharge of any hazardous waste;[111] (2) in the notification forms DOE did submit to EPA relative to sites used

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[107] 42 U.S.C. S 2011 et seq.
[108] 42 U.S.C. S 9601 et seq.
[109] 42 U.S.C. S 6901 et seq.
[110] 33 U.S.C. S 1251 et seq.
[111] Ibid., at 78.

for waste disposal, DOE indicated that "no groundwater contamination" had been found at sites where DOE data existed to the contrary,[112] and (3) according to Mr. Zeller (EPA), DOE was not forthcoming with information EPA needed to rewrite the expired NPDES permit for Y-12.[113] Several witnesses at the hearing also testified that several of DOE's current waste practices would be, if they are subject to RCRA, violations of the law.[114]

(A) CERCLA -- The Superfund law itself does not contain any specific exclusion for DOE facilities, or any federally owned facilities for that matter. In general, however, because revenues for the Superfund are generated predominantly by a tax on private industry, Superfund resources are unavailable for clean up operations at federal waste sites.[115] Nevertheless, money for certified emergency response activity at a federal facility could be made available under the Superfund if justified by circumstances.

While Superfund monies are thus not available for remedial actions at federal sites, the listing of these sites on the National Priorities List (NPL) -- a list of serious hazardous waste sites across the country compiled by EPA pursuant to CERCLA -- can have certain effects on activity at a federal site. Principally, listing a federal site on the NPL would indicate that it presents potential hazards of sufficient severity to warrant attention by federal and state officials.

The initial NPL issued in November 1982 did not include federal sites, as a result of a decision by then EPA Administrator Anne Gorsuch to exclude them.[116] EPA has begun, however, evaluating federal waste sites for possible inclusion on an updated NPL.[117]

It is unclear whether the Oak Ridge facilities will be included on the next NPL. An absence of solid information about the extent of hazardous waste problems at Oak Ridge has hampered efforts to evaluate the complex for NPL purposes.[118]

Additionally, the Superfund law requires hazardous waste disposers, including federal facilities, to provide certain information to EPA. DOE initially took a position that because it was subject to the Atomic Energy Act, the reporting

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[112]Staff review of documents.
[113]Ibid., at 82.
[114]Ibid., at 37 (Wing); at 88-89 (Zeller).
[115]Ibid., at 78 (Zeller). See also Ibid., at 105 (Bruner).
[116]See EPA Guidance Memorandum on Establishing National Priorities List Under the Superfund Law, reprinted in [1982] Environmental Reporter 339.
[117]I&O staff conversation with EPA Region IV officials.
[118]I&O Staff conversation with TDHE and EPA Region IV officials.

requirements of Superfund did not apply for Oak Ridge.[119] Subsequently, DOE reversed its position and now concedes that it is required to provide information to EPA under Superfund.[120]

(B) RCRA -- As the nation's principal hazardous waste disposal law, RCRA prohibits harmful waste disposal practices and provides EPA (and the states) with authority to regulate waste disposal practices generally. RCRA has been the object of some controversy between DOE, EPA, and TDHE for two reasons, however.

First, under RCRA, a state can "take over" from EPA regulation of a federal facility through an authorization program similar to that of the CWA. Tennessee has been delegated Phase I authority under RCRA and thus has the authority to conduct compliance evaluation inspections of federal facilities. Like many states, however, Tennessee has yet to complete the application process for Phase II authorization. Consequently, it does not have authority to issue and renew permits under RCRA.[121] This incomplete authorization of the state to implement RCRA regulations in Tennessee has contributed to some extent to conflicts between the TDHE and EPA and DOE as the State has occasionally attempted more aggressive investigation and regulation of the Oak Ridge facility than EPA has been willing to permit.[122]

Second, and of far greater importance, is the language of RCRA itself. By its terms RCRA authorizes EPA to regulate only "solid wastes" and "hazardous wastes". Section 1004(27) of RCRA[123] expressly exempts from the definition of these wastes "source, special nuclear or byproduct material as defined by the Atomic Energy Act of 1954." Moreover, section 1006 of RCRA,[124] sets certain limits on EPA oversight at DOE. That section provides:

> "[N]othing in this Act shall be construed to apply to (or to authorize any state... to regulate) any activity or substance which is subject to the... Atomic Energy Act of 1954... except to the extent that such application (or regulation) is not inconsistent with the requirements of [the AEA]."

DOE has adopted a broad interpretation of Section 1006 and has maintained that all of its activities are exempted from RCRA coverage by virtue of these provisions. In a memorandum dated

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[119] See Appendix ___.
[120] See Appendix ___.
[121] Bruner Testimony at March 30, 1983, I&O hearing in Jackson, Tennessee.
[122] Bruner March 30 testimony. See also July 11, 1983 transcript at 97 (Bruner).
[123] 42 U.S.C. S ___.
[124] 42 U.S.C. S ___.

November 14, 1980, to the EPA Associate General Counsel, James A. Rogers, Mr. Stephen H. Greenleigh, then DOE's Assistant General Counsel for the Environment, stated that "DOE believes that section 1006(a) of RCRA makes EPA's hazardous waste management regulations inapplicable to DOE activities performed under authority of the [Atomic Energy Act]."[125] Mr. Greenleigh insisted that "[t]he application of EPA's hazardous waste management regulations to [DOE's] atomic energy activities would be duplicative and inconsistent with the requirements of the AEA and with DOE's responsibilities under the statute..."[126]

This position adopted generally at ORO has led to a claim of total exemption from RCRA for all waste generated at Y-12. Oak Ridge officials have focused on the RCRA section 1006 exemption for "any activity" subject to the AEA to claim that because their waste -- even nonradioactive waste -- is generated from processes related to atomic weapons production, EPA (and state) officials have no authority over their disposal practices.[127] This contention resulted in confusion and conflicts between DOE and the TDHE and EPA, as the regulatory agencies attempted to gather information about disposal practices at the Reservation and bring those practices into compliance with the guidelines that governed disposal activity by private parties.[128]

DOE officials also generally expressed concern over the potential costs of regulation under RCRA. DOE estimated that application of RCRA to AEA facilities could cost as much as $100 million over a 5-10 year period.[129]

EPA was initially uncertain whether RCRA applied to DOE disposal practices and consequently wavered in its efforts to seek DOE compliance with RCRA regulations. In an internal memorandum dated August 6, 1981, EPA's Associate Administrator for Legal Counsel and Enforcement took the position that EPA could regulate non-nuclear wastes from AEA-type facilities provided such regulation did not conflict with the requirements of the AEA. He also concluded that it could refrain from acting if DOE's hazardous waste regulatory program was comparable to EPA regulations under RCRA. Finally, he determined that EPA was foreclosed from regulating AEA-related chemical and nuclear waste mixtures.[130]

On January 12, 1982, however, EPA's Office of Federal Activities (OFA) took a position more broadly supportive of DOE's

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[125]See Appendix__.

[126]Id. Apart from any legal position the contention that ORO's waste disposal program was equivalent to RCRA has been seriously questioned. See fn. 109, p. 94.

[127]Hearing transcript at 27-28 (Foutch).

[128]Ibid., at 82 (Zeller) at 97 (Bruner).

[129]See Appendix to hearing record.

[130]See Appendix to hearing record.

position than that taken by the agency's Legal Counsel. In a letter to DOE/ORO, EPA's OFA stated: "The prepared disposal operations of hazardous wastes from DOE's Atomic Energy Act facilities is exempt from the provisions of RCRA."[131] OFA's proposed MOU on this point was never approved by EPA, on June 22, 1983, EPA not only repudiated the OFA position, but also broadened its earlier (August 1981) position. In a memo from EPA's Acting General Counsel (AGC) to OFA, AGC reiterated the applicability of RCRA to non-nuclear AEA-related wastes, rejected the notion that DOE could blanketly pre-empt EPA regulation under RCRA merely by establishing its own regulatory framework, and concluded that the question whether certain AEA activities are exempt from RCRA must be addressed on a case-by-case basis. The AGC also stated that he needed more information before he could determine whether chemical and waste mixtures were subject to RCRA.[132] These jurisdictional problems remain unresolved.

For its part, the state historically followed EPA's lead on this issue. In the spring of 1983, however, the TDHE began to assume a somewhat more aggressive posture than EPA enforcement of regulations.

Included as Appendix __ to this report is a chronology of events relating to the debate over RCRA's and CERCLA's applicability to the Oak Ridge complex. The chronology is useful to understand the present posture of the parties toward DOE compliance with RCRA.

(C) CWA -- EPA's Region IV policy for federal facilities has placed a great deal of discretion in the hands of a federal facility's management in designing and complying with NPDES permits. Unlike private companies, who are subject to strict effluent limitations and sampling requirements, federal facilities are free to designate their own sampling sites and procedures. EPA exercises none of its authority to evaluate the location or the adequacy of the point sources chosen as sampling or permit sites. Nor does EPA stipulate the time of day or conditions under which the sampling for the permit is taken.

The original Oak Ridge NPDES permits, issued in 1974 and modified in 1977, expired in 1980 and have yet to be renewed. Consequently, the facilities have continued to operate under the parameters of the old permits, which are not reflective of the most recent dialogue on this matter. DOE, EPA, and TDHE are currently negotiating new NPDES permits for the Reservation.[133] This includes relocating monitoring sites closer to the point source discharges at various lactions on the Oak Ridge Reservation.

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[131]Letter from Paul Cahill to J. F. Wing. See Appendix to hearing record.

[132]See Appendix to hearing record.

[133]Hearing transcript at 24 (LaGrone), at 65 (Zeller).

At the Subcommittees' hearing, concern was expressed that DOE's position on the exemption of certain of facilities from federal and state environmental laws has impeded progress at the complex toward modernization of its waste management practices. Chairman Gore expressed his worry that "federal facilities are legally subject to less stringent compliance than private facilities" and that "those charged with carrying out the law have administratively decided not to hold federal facilities to strict compliance." Mr. Rivkin added that even if compliance at the Y-12 plant were substantively equivalent to the requirements of RCRA, procedural compliance with permits, monitoring, and enforcement would also be essential to "insure that compliance actually succeeds."[134] The question as to whether procedural compliance is required rests on whether DOE is governed by EPA's regulations.

The third of the Subcommittees' three recommendations seeks to resolve the controversies between DOE and EPA with the goal of speeding Oak Ridge toward meaningful compliance with federal and state environmental laws. The Subcommittees believe that at a minimum, DOE should agree to substantive compliance with all aspects of EPA regulation that are not inconsistent with its national defense responsibilities under the AEA.

CONCLUSION

The Subcommittees believe that the ORO has moved constructively since the first disclosures of the mercury release, and the Subcommittees encourage DOE Headquarters management to remain strongly supportive of the positive steps taken thus far by the ORO. Just as the acquiescence of senior DOE officials at ORO and Headquarters must have played a role in suppressing the key information on mercury releases, the strong commitment to resolve all of the environmental problems at the Oak Ridge Reservation must be present at the highest levels of the Department to assure timely solution of these issues.

In its retrospective evaluation of the Oak Ridge Reservation pollution situation, the Subcommittees found that an old conundrum formed the primary issues: the mercury and chemical pollution form Y-12 were like the tree falling in the uninhabited forest -- so far, the events have apparently had no physical effect on humans, but that does not imply that the events lacked profound importance. Rather, a careful look has revealed that ORO's failure to adequately incorporate environmental concerns into its sense of mission might well have caused serious harm to the surrounding communities, had physical and geological conditions been different or had incipient environmental problems not seen the light of day until tangible damage had begun to occur.

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[134] Ibid. at 246.

Y-12 is not "one of the worst waste sites in the country," as an August 1983 article in the Washington Post claimed, but it does reflect years of insufficient attention to the consequences of improper chemical disposal and discharge, somehow made more unsettling by the knowledge that the responsible party was an agency of the federal government.

The Subcommittees also recognize that:

- The previous tendency of the ORO to place low priority on environmental concerns must be replaced by a policy whereby environmental requirements are an integral part of all program activities carried out at the Reservation.

- Senior management within the DOE, both at the Headquarters level and within the ORO must assure that appropriate attention is given to environmental control activities. This includes all program planning and specification of funding requirements prior to annual budget submissions.

- Congress must provide the legislative, budget authorization and appropriate oversight support necessary to assure that environmental efforts at the Oak Ridge Reservation can be implemented and proceed in a timely manner. This requirement is somewhat complicated by the fact that Congressional oversight, authorization, and appropriation of the various functional elements within the Oak Ridge Reservation is accomplished through several Congressional Committees.

In its prospective evaluation, the Subcommittees are encouraged by the recent actions of the ORO, and the Subcommittees' recommendations, which largely speak for themselves, are designed to support and encourage these efforts. The recommendations are designed to ensure two critical outcomes:

- That independent scientists with substantial expertise in the relevant areas of toxicology, hydrogeology, epidemiology, water chemistry, environmental restoration, waste management, and environmental law are able to assist DOE in collecting appropriate and accurate data, planning thorough and cost-effective remedial actions, and upgrading the quality of its environmental protection program. Through such assistance the credibility of DOE's environmental activities will be enhanced and DOE will retain maximum flexibility to discharge its responsibilities in the most efficient manner.

- That DOE resources and management attention are focused such that the overall environmental problems at Oak Ridge Reservation are resolved in a timely fashion, and that the environmental quality at the Oak Ridge Reservation does not become subordinate to legal dispute about jurisdiction over DOE activities so that ORO can concentrate on making much needed environmental improvements and carrying out its nationally important traditional activities.